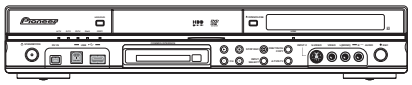
Pioneer sound.vision.soul

Service Manual



DVR-LX60D

ORDER NO.
RRV3573

DVD RECORDER

DVR-LX60D
DVR-LX60D-AV
DVR-550HX-S

THIS MANUAL IS APPLICABLE TO THE FOLLOWING MODEL(S) AND TYPE(S).

Model	Type	Power Requirement	Region No.	Serial No. Please confirm 3rd & 4th alphabetical letters.
DVR-LX60D	WYXK5	AC 220 V to 240 V	2	&&UK######$$
DVR-LX60D	WVXK5	AC 220 V to 240 V	2	&&UK######$$
DVR-LX60D	YXKRE5	AC 220 V to 240 V	5	&&UK######$$
DVR-LX60D-AV	WYXK5	AC 220 V to 240 V	2	&&UK######$$
DVR-550HX-S	WYXK5	AC 220 V to 240 V	2	&&UK######$$
DVR-550HX-S	WVXK5	AC 220 V to 240 V	2	&&UK######$$
DVR-550HX-S	YXKRE5	AC 220 V to 240 V	5	&&UK######$$

For details, refer to "Important Check Points for good servicing".

PIONEER CORPORATION 4-1, Meguro 1-chome, Meguro-ku, Tokyo 153-8654, Japan
PIONEER ELECTRONICS (USA) INC. P.O. Box 1760, Long Beach, CA 90801-1760, U.S.A.
PIONEER EUROPE NV Haven 1087, Keetberglaan 1, 9120 Melsele, Belgium
PIONEER ELECTRONICS ASIACENTRE PTE. LTD. 253 Alexandra Road, #04-01, Singapore 159936
ⓒ**PIONEER CORPORATION 2007**

T-FZA-001 MAY 2007 printed in Japan

SAFETY INFORMATION

■ LABEL CHECK

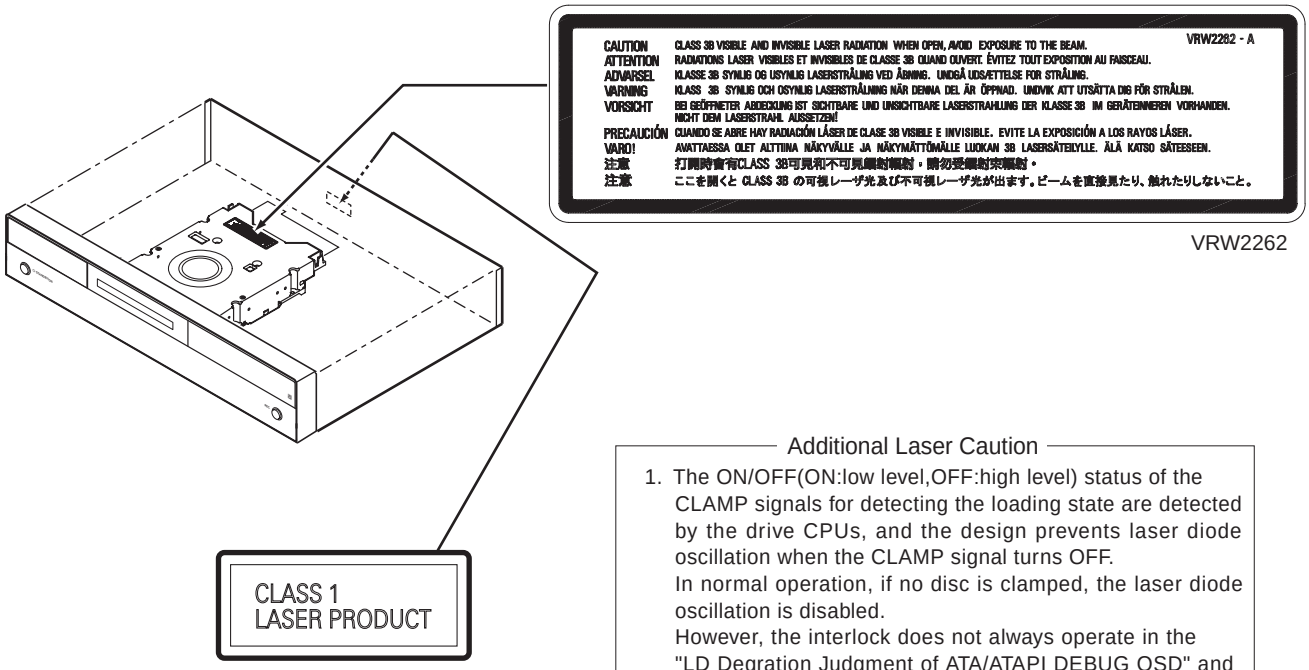
WARNING!

The laser component is capable of emitting radiation exceeding the limit for CLASS 1. A specially instructed person should do servicing operation of the apparatus.

Laser Pickup specifications and Laser characteristics

For CD
- Wave length : 785 nm
- Operating output :
  - Read mode : 1.07 mW (CW), Class1
- Maximum output : Class1M

For DVD
- Wave length : 660 nm
- Operating output :
  - Read mode : 1.08 mW, Class1
  - Write mode : 21.89 mW (Pulse), Class1M
- Maximum output : Class2M


VRW2262 - A
CAUTION CLASS 3B VISIBLE AND INVISIBLE LASER RADIATION WHEN OPEN, AVOID EXPOSURE TO THE BEAM.
ATTENTION RADIATIONS LASER VISIBLES ET INVISIBLES DE CLASSE 3B QUAND OUVERT. ÉVITEZ TOUT EXPOSITION AU FAISCEAU.
ADVARSEL KLASSE 3B SYNLIG OG USYNLIG LASERSTRÅLING VED ÅBNING. UNDGÅ UDSÆTTELSE FOR STRÅLING.
VARNING KLASS 3B SYNLIG OCH OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD. UNDVIK ATT UTSÄTTA DIG FÖR STRÅLEN.
VORSICHT BEI GEÖFFNETER ABDECKUNG IST SICHTBARE UND UNSICHTBARE LASERSTRAHLUNG DER KLASSE 3B IM GERÄTEINNEREN VORHANDEN. NICHT DEM LASERSTRAHL AUSSETZEN!
PRECAUCIÓN CUANDO SE ABRE HAY RADIACIÓN LÁSER DE CLASE 3B VISIBLE E INVISIBLE. EVITE LA EXPOSICIÓN A LOS RAYOS LÁSER.
VARO! AVATTAESSA OLET ALTTIINA NÄKYVÄLLE JA NÄKYMÄTTÖMÄLLE LUOKAN 3B LASERSÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN.
注意 打開時會有CLASS 3B可見和不可見鐳射輻射。請勿受鐳射束輻射。
注意 ここを開くと CLASS 3B の可視レーザ光及び不可視レーザ光が出ます。ビームを直接見たり、触れたりしないこと。
CLASS 1
LASER PRODUCT

VRW2262

Additional Laser Caution

1. The ON/OFF(ON:low level,OFF:high level) status of the CLAMP signals for detecting the loading state are detected by the drive CPUs, and the design prevents laser diode oscillation when the CLAMP signal turns OFF.
   In normal operation, if no disc is clamped, the laser diode oscillation is disabled.
   However, the interlock does not always operate in the "LD Degration Judgment of ATA/ATAPI DEBUG OSD" and "LD POWER ADJUSTMENT"*.

2. When the cover is opened, close viewing of the objective lens with the naked eye will cause exposure to a Class 3A laser beam.

* Refer to Pages 49 and 79.

[Important Check Points for Good Servicing]

In this manual, procedures that must be performed during repairs are marked with the below symbol.
Please be sure to confirm and follow these procedures.

1. Product safety

Please conform to product regulations (such as safety and radiation regulations), and maintain a safe servicing environment by following the safety instructions described in this manual.

① Use specified parts for repair.

Use genuine parts. Be sure to use important parts for safety.

② Do not perform modifications without proper instructions.

Please follow the specified safety methods when modification(addition/change of parts) is required due to interferences such as radio/TV interference and foreign noise.

③ Make sure the soldering of repaired locations is properly performed.

When you solder while repairing, please be sure that there are no cold solder and other debris.
Soldering should be finished with the proper quantity. (Refer to the example)

④ Make sure the screws are tightly fastened.

Please be sure that all screws are fastened, and that there are no loose screws.

⑤ Make sure each connectors are correctly inserted.

Please be sure that all connectors are inserted, and that there are no imperfect insertion.

⑥ Make sure the wiring cables are set to their original state.

Please replace the wiring and cables to the original state after repairs.
In addition, be sure that there are no pinched wires, etc.

⑦ Make sure screws and soldering scraps do not remain inside the product.

Please check that neither solder debris nor screws remain inside the product.

⑧ There should be no semi-broken wires, scratches, melting, etc. on the coating of the power cord.

Damaged power cords may lead to fire accidents, so please be sure that there are no damages.
If you find a damaged power cord, please exchange it with a suitable one.

⑨ There should be no spark traces or similar marks on the power plug.

When spark traces or similar marks are found on the power supply plug, please check the connection and advise on secure connections and suitable usage. Please exchange the power cord if necessary.

⑩ Safe environment should be secured during servicing.

When you perform repairs, please pay attention to static electricity, furniture, household articles, etc. in order to prevent injuries.
Please pay attention to your surroundings and repair safely.

2. Adjustments

To keep the original performance of the products, optimum adjustments and confirmation of characteristics within specification.
Adjustments should be performed in accordance with the procedures/instructions described in this manual.

3. Lubricants, Glues, and Replacement parts

Use grease and adhesives that are equal to the specified substance.
Make sure the proper amount is applied.

4. Cleaning

For parts that require cleaning, such as optical pickups, tape deck heads, lenses and mirrors used in projection monitors, proper cleaning should be performed to restore their performances.

5. Shipping mode and Shipping screws

To protect products from damages or failures during transit, the shipping mode should be set or the shipping screws should be installed before shipment. Please be sure to follow this method especially if it is specified in this manual.

CONTENTS

SAFETY INFORMATION 2
1. SERVICE PRECAUTIONS 6
1.1 NOTES ON SOLDERING 6
1.2 NOTES ON HANDLING THE HDD 7
1.3 NOTES ON REPLACEMENT OF THE SDRAM 9
1.4 NOTE ON INSULATORS AND THEIR SET SCREWS 9
1.5 NOTES ON REPLACEMENT OF THE FL LENS 10
1.6 NOTE ON PC CARDS 10
2. SPECIFICATIONS 11
2.1 ACCESSORIES 11
2.2 SPECIFICATIONS 12
2.3 DISC/CONTENT FORMAT 14
2.4 PANEL FACILITIES 19
3. BASIC ITEMS FOR SERVICE 25
3.1 CHECK POINTS AFTER SERVICING 25
3.2 QUICK REFERENCE 26
3.3 PCB LOCATIONS 27
3.4 JIGS LIST 28
4. BLOCK DIAGRAM 30
4.1 OVERALL WIRING DIAGRAM 30
4.2 OVERALL BLOCK DIAGRAM 32
4.3 POWER BLOCK DIAGRAM 34
5. DIAGNOSIS 35
5.1 SETUP SEQUENCE 35
5.2 DIAGNOSIS OF THE MAIN ASSY 36
5.3 DIAGNOSIS OF THE DTVD ASSY 40
6. SERVICE MODE 41
6.1 VERSION INFORMATION, ETC. (FIRST SCREEN) 43
6.2 ATA/ATAPI DEBUG SCREEN (SECOND SCREEN) 48
6.3 VR-RECORDING-RELATED ERROR LOGS (FOURTH SCREEN) 50
6.4 VR-PLAYBACK-RELATED ERROR LOGS (FIFTH SCREEN) 54
6.5 DV SERVICE MODE 57
6.6 EPG SERVICE MODE 60
6.7 HDMI SERVICE MODE 62
6.8 AGING MODE 64
6.9 USB CHECK MODE 66
6.10 HDD CHECK MODE 67
7. DISASSEMBLY 73
8. EACH SETTING AND ADJUSTMENT 78
8.1 MODEL SETTING 78
8.2 LD POWER ADJUSTMENT 79
8.3 CPRM ID NUMBER AND DATA SETTING 83
8.4 FIRMWARE UPDATE METHOD 87
8.5 VIDEO ADJUSTMENT FOR SPECIFIC AREA 90
9. EXPLODED VIEWS AND PARTS LIST 94
9.1 PACKING 94
9.2 EXTERIOR SECTION 96
9.3 FRONT PANEL SECTION 98
9.4 SERVICE LOADER MAIN SECTION 102
10. SCHEMATIC DIAGRAM 104
10.1 SERVICE TUSB ASSY (1/4) 104
10.2 SERVICE TUSB ASSY (2/4) 106
10.3 SERVICE TUSB ASSY (3/4) 108
10.4 SERVICE TUSB ASSY (4/4) 110
10.5 SERVICE FLKY and SERVICE FRJB ASSYS 112
10.6 SERVICE MAIN ASSY (1/5) 114
10.7 SERVICE MAIN ASSY (2/5) 116
10.8 SERVICE MAIN ASSY (3/5) 118
10.9 SERVICE MAIN ASSY (4/5) 120
10.10 SERVICE MAIN ASSY (5/5) 122
10.11 DTVD ASSY (1/4) 124
10.12 DTVD ASSY (2/4) 126
10.13 DTVD ASSY (3/4) 128
10.14 DTVD ASSY (4/4) 130
10.15 SERVICE DVUB ASSY 132

10.16 POWER SUPPLY ASSY....134
10.17 WAVE FORMS....136
11. PCB CONNECTION DIAGRAM....141
11.1 SERVICE TUSB ASSY....142
11.2 SERVICE FLKY ASSY....146
11.3 SERVICE FRJB ASSY....148
11.4 SERVICE MAIN ASSY....150
11.5 DTVD ASSY....154
11.6 SERVICE DVUB ASSY....158
11.7 POWER SUPPLY ASSY....160
12. PCB PARTS LIST....162

1. SERVICE PRECAUTIONS

●When servicing this model, some service procedures may reset the customer settings to the factory default settings. Make sure to explain this to the customer.

●An HDD (Hard Disc Drive) is mounted in this product.
When an HDD becomes defective and inoperable, restoration of the user's data recorded on the HDD, or copying of the user's recorded data to other media (such as a new HDD) is totally impossible. Before servicing, OBTAIN THE USER'S PRIOR CONSENT to that effect.
The user must be made aware that all recorded data are deleted if the HDD is intialized.

1.1 NOTES ON SOLDERING

• For environmental protection, lead-free solder is used on the printed circuit boards mounted in this unit.
Be sure to use lead-free solder and a soldering iron that can meet specifications for use with lead-free solders for repairs accompanied by reworking of soldering.

• Compared with conventional eutectic solders, lead-free solders have higher melting points, by approximately 40 ºC. Therefore, for lead-free soldering, the tip temperature of a soldering iron must be set to around 373 ºC in general, although the temperature depends on the heat capacity of the PC board on which reworking is required and the weight of the tip of the soldering iron.

Do NOT use a soldering iron whose tip temperature cannot be controlled.

Compared with eutectic solders, lead-free solders have higher bond strengths but slower wetting times and higher melting temperatures (hard to melt/easy to harden).

The following lead-free solders are available as service parts:
• Parts numbers of lead-free solder:
GYP1006 1.0 in dia.
GYP1007 0.6 in dia.
GYP1008 0.3 in dia.

1.2 NOTES ON HANDLING THE HDD

(1) Cautions on Handling the HDD

- The HDD is very sensitive to shocks and vibrations. Care must be taken especially during operation (when the power is on).
- The HDD is very sensitive to electrostatic charges.
- Rapid change in temperature or humidity may cause deterioration of the HDD.

Note: After receiving damage caused by any above-mentioned factors, the HDD may operate normally for dozens or some hundreds of hours but then suddenly crash. If you are certain you have damaged a new repair part (HDD) while making repairs, do not use the part.

The HDD is about 10 times as sensitive to shock during operation than during nonoperation.

Reference: Main specifications on damage to the HDD

	During operation	During noperation
Shock G (acceleration)	<approx. 20 G	<approx. 200 G
Temperature change	< 20ºC/hour	
Moisture change	< 20%/hour	

Reference: Estimate value of falling distance vs. shock (G) when the HDD is dropped without protection

Falling distance \ Landing surface	Granite surface	Concrete floor	Synthetic-resin-coated table	Antistatic sponge
0.5 inch / 12.7 mm	387	217	200	26
1.0 inch / 25.4 mm	595	457	310	37
2.0 inch / 50.8 mm	1133	600	680	70
4.0 inch / 101.6 mm	1795	1040	1050	267

(2) Cautions on handling the product on which the HDD is mounted or the HDD as a repair part, and examples of dangerous handling

[Cautions on handling the product on which the HDD is mounted]

- While the unit is turned on, the HDD is always in operation. Be sure NOT to impart shock to the unit.

● Examples of dangerous handling: while the power is on

- Bumping on the bonnet
- Dropping an object, such as a small screwdriver or remote control unit, onto the bonnet, or bumping an object against the cabinet
- Moving the unit by dragging
- Stacking another product on the unit

Note: Be sure NOT to impart shock, such as bumping or hitting a screwdriver against the HDD, during diagnosis with the bonnet open.

● Examples of dangerous handling: while the power is off

- Imparting strong shock, although the HDD is more resistant to shock when the power is off
- Dropping the unit from a height of several centimeters, or after lifting one side of the unit up, then letting the unit drop.

- Do NOT move the unit immediately after the power is turned off. Wait at least 30 seconds after the indication on the FL display changed from POWER OFF to the clock indication before moving the unit. If the AC power cord is accidentally disconnected before turning the unit off, wait at least for one minute before moving it. In this case, damage to the HDD caused by sudden shutoff may be small, because the emergency relief mechanism is activated. However, if sudden shutoff occurrs during recording or playback, recorded data may be damaged. Be sure to check operations.

[Cautions on handling the HDD as a repair part]

1. Handle the HDD in a safe environment:
   - Handle the HDD over an antistatic pad that can also absorb shock.
   - Wear wrist bands to prevent electrostatic charges generated in your body from affecting the HDD.

2. The following must be observed when handling the HDD:
   - Handle one HDD at a time. Do NOT hold several HDDs at the same time.
   - Grip the HDD on both sides so that you do not touch its terminals or circuit boards.
   - Do NOT stack one HDD onto another HDD (even if the HDDs are protected in antistatic bags).
   - Do NOT bump the HDDs against one another.
   - Do NOT bump any tool, such as a screwdriver, or other hard object against the HDD.
   - When a repair part (HDD) is transported and there is a large temperature difference between outdoors and indoors, to the indoor, leave it in its package for about a half day to gradually cool or warm the HDD to room temperature before unpacking it.

[Notes on packing for shipment]

- When returning a defective HDD for analysis, handle with care as if it were a good product. Otherwise, the results of analysis may not be correct.
- When packing, use the antistatic bag and packing materials in which the repair part for service was delivered. Attach a copy of the slip for service or a memo stating symptoms in as much detail as possible.

■ Outline and part No. of the HDDs

*Pioneer's part No. is not stamped.

Model Name	Capacity	SEAGATE	
		Pioneer's Part No. (for service)	Manufacture's Part No.
DVR-LX60D DVR-LX60D-AV	250GB	VXF1131	ST3250820SCE
DVR-550HX-S	160GB	VXF1137	WD1600AABS-xxPRAx

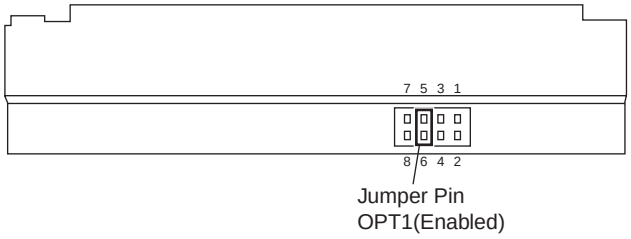
- When replacing the HDD, carefully check the capacity and manufacturer's part No. on the part label to avoid replacing with a similar but inappropriate product. You can also check the model No. of the mounted HDD on the Service mode screen.
- Do NOT use repair parts, such as commercially available HDDs, other than those designated above, as their functions, performance or reliability cannot be guaranteed.

Wistern Digital(160GB)

Seagate(250GB)

■ Confirmation of the jumper pin location of the HDD

VXF1137(DVR-550HX-S : 160GB)



1.3 NOTES ON REPLACEMENT OF THE SDRAM

Note when replacing the SDRAM

When replacement of the SDRAM (IC1201 or IC1221) on the MAIN Assy is required, identify the manufacturer of the SDRAM.
If the SDRAM that needs replacement was manufactured by ELPIDA, both IC1201 and IC1221 must be replaced at the same time.
SDRAMs for service are manufactured by SAMSUNG.

- **How to identify the manufacturer**

  Confirm the name of the manufacturer stamped on the surface of the part.

By ELPIDA (replacement of both SDRAMs required)

By SAMSUNG (replacement of only the defective SDRAM possible)

- **Measures to be taken**

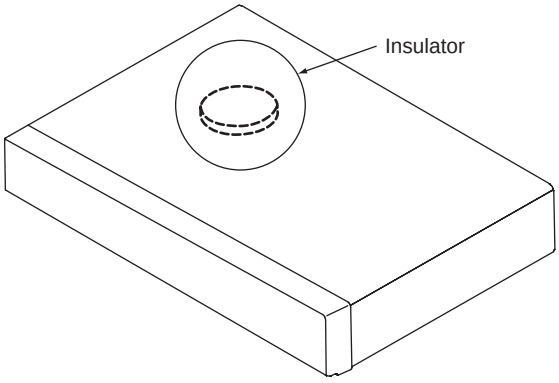
  ① If the SDRAM that needs replacement was manufactured by ELPIDA:
  Replace both IC1201 and IC1221 at the same time.
  ② If the SDRAM that needs replacement was manufactured by SAMSUNG:
  Replacement of only the defective SDRAM (IC1201 or IC1221) is possible.

- **Possible malfunctions**

  If SDRAMs made by different manufacturers are mounted on the MAIN Assy, the following malfunctions may occur:
  ① The power does not come on.
  ② High-speed dubbing disabled
  ③ Other malfunctions related to the SDRAM

1.4 NOTE ON INSULATORS AND THEIR SET SCREWS

For compliance with the safety standards, removal of the insulators and their set screws, as shown in the figure below, is prohibited. If they are removed, this product may not meet the official standards. NEVER remove these parts from the product.

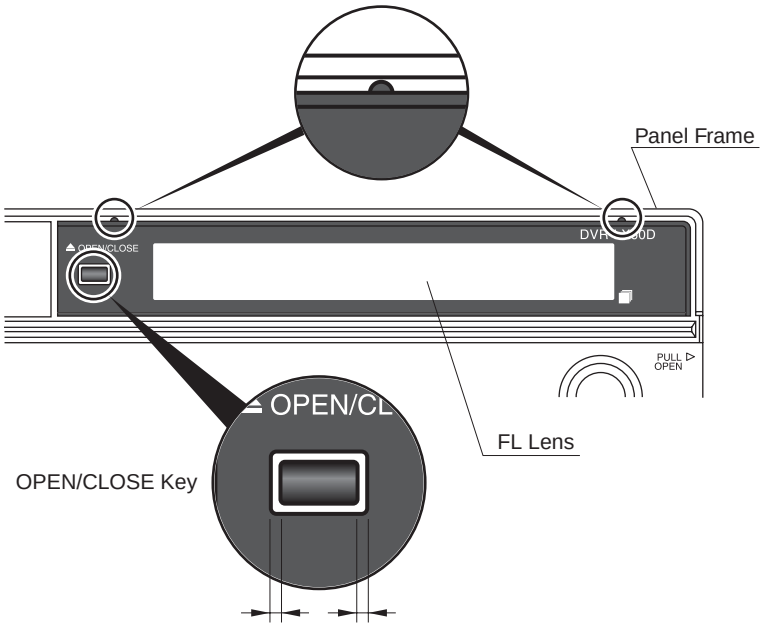


1.5 NOTES ON REPLACEMENT OF THE FL LENS

The Panel Frame, FL Lens, and FL Filter are attached to the chassis with two-sided (double-back) tape.
If one of these parts has to be replaced, replace all three parts at the same time.
To replace the FL Lens, follow the procedures described below:

Procedures for replacement of the FL Lens

1. Lightly attach the FL Lens so that the two projections on the upper side of the panel touch the Panel Frame and that the clearances between the OPEN/CLOSE key and the cutout for that key on the FL Lens will be the same on the left and right sides.
2. After confirming that the FL Lens is properly aligned, strongly push the black part of the FL Lens to firmly attach it. Be careful not to press the OPEN/CLOSE key while attaching the FL Lens.



1.6 NOTE ON PC CARDS

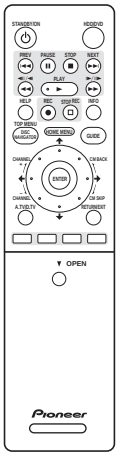
If ejection of the PC card cannot be accomplished by your pressing the EJECT key, the PC card may have been inserted incorrectly. In such a case, remove the front panel, following the disassembly procedures, then manually remove the PC card.

2. SPECIFICATIONS

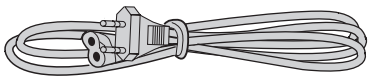
2.1 ACCESSORIES

For DVR-LX60D/WYXK5 and DVR-550HX-S/WYXK5

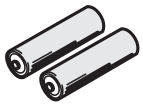
- Remote control ×1
  (VXX3221 : DVR-LX60D)
  (VXX3245 : DVR-550HX-S)



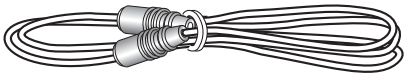
- Power cable ×1
  (ADG1127)



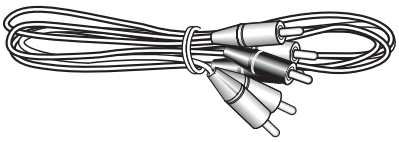
- Dry cell batteries ×2
  (AA/R6P)



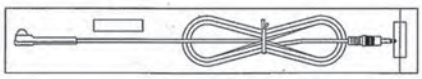
- RF antenna cable(PAL) ×2
  (VDE1075)



- Audio / Video cable(1.5m) ×1
  (red/white/yellow)
  (VDE1077)



- G-Link™ Cable (3m) ×1
  (VDX1010)



- Operating Instructions (French)
  (VRC1379 : DVR-LX60D/WYXK5)
  (VRC1378 : DVR-550HX-S/WYXK5)
- Operating Instructions (German)
  (VRC1384 : DVR-LX60D/WYXK5)
  (VRC1383 : DVR-550HX-S/WYXK5)
- Operating Instructions (Italian)
  (VRC1388 : DVR-LX60D/WYXK5)
  (VRC1387 : DVR-550HX-S/WYXK5)
- Operating Instructions (Dutch)
  (VRC1392 : DVR-LX60D/WYXK5)
  (VRC1391 : DVR-550HX-S/WYXK5)
- Operating Instructions (Spanish)
  (VRC1396 : DVR-LX60D/WYXK5)
  (VRC1395 : DVR-550HX-S/WYXK5)
- Warranty Card

2.2 SPECIFICATIONS

General

Power requirements ..... 220 V to 240 V, 50 Hz/60 Hz
Power consumption ..... 58 W
Power consumption in standby mode ..... 0.69 W
(Front panel display: off)
Weight ..... 4.8 kg
Dimensions
..... 420 mm (W) x 77 mm (H) x 288 mm (D)
Operating temperature ..... +5 °C to +35 °C
Operating humidity
.....5 % to 85 % (no condensation)
TV system..... NTSC (external input only)
/PAL/SECAM

Readable discs
DVD-Video, DVD-RW, DVD-R, DVD+R, DVD+RW, DVD-RAM, Video CD, Super VCD, CD, CD-R/-RW (WMA, MP3, JPEG, CD-DA, DivX)

Recording discs and formats
DVD-R/-RW: VR mode and Video mode
DVD+R/+RW: +VR mode
DVD-RAM: VR mode
DVD-R DL: VR mode and Video mode
DVD+R DL: +VR mode

Video recording format
Sampling frequency..... 13.5 MHz
Compression format ..... MPEG

Audio recording format
Sampling frequency.....48 kHz
Compression format ..... Dolby Digital or Linear PCM
(uncompressed)

Recording time
HDD (250 GB)
XP+..... Approx. 36 h
Fine (XP) ..... Approx. 53 h
Standard Play (SP)..... Approx. 106 h
Long Play (LP)..... Approx. 212 h
Extended Play (EP) ..... Approx. 319 h
Super Long Play (SLP)..... Approx. 425 h
Super Extended Play (SEP) ..... Approx. 532 h
Manual Mode (MN)..... Approx. 36 h to 711 h

DVD-R/-RW, DVD+R/+RW, DVD-RAM
Fine (XP) ..... Approx. 1 h
Standard Play (SP)..... Approx. 2 h
Long Play (LP)..... Approx. 4 h
Extended Play (EP) ..... Approx. 6 h
Super Long Play (SLP)..... Approx. 8 h
Super Extended Play (SEP) ..... Approx. 10 h
(DVD-R/-RW, DVD-RAM only)
Manual Mode (MN)
DVD-R/-RW/-RAM.....Approx. 1 h to 13 h
DVD+R/+RW .....Approx. 1 h to 8 h

DVD-R DL/DVD+R DL
Fine (XP) ..... Approx. 1 h 51 m
Standard Play (SP)..... Approx. 3 h 35 m
Long Play (LP)..... Approx. 7 h 11 m
Extended Play (EP) ..... Approx. 10 h 46 m
Super Long Play (SLP)..... Approx. 14 h 21 m
Super Extended Play (SEP) ..... Approx. 17 h 57 m
(DVD-R DL only)
Manual Mode (MN)
DVD-R DL.....Approx. 1 h 51 m to 24 h
DVD+R DL.....Approx. 1 h 51 m to 14 h 21 m

Timer

Programmes.....1 month/32 programmes
Clock..... Quartz lock (24-hour digital display)

Tuner (analog)

Receivable channels

	SECAM B/G PAL B/G		PAL I	
	Frequency	Channel	Frequency	Channel
VHF (low)	47 MHz to 89 MHz	E2 to E4 X to Z	44 MHz to 89 MHz	A to C X to Z
VHF (high)	104 MHz to 300 MHz	E5 to E12 S1 to S20 M1 to M10 U1 to U10	104 MHz to 300 MHz	D to J 11, 13 S1 to S20
Hyper	302 MHz to 470 MHz	S21 to S41	302 MHz to 470 MHz	S21 to S41
UHF	470 MHz to 862 MHz	E21 to E69	470 MHz to 862 MHz	E21 to E69

	SECAM L		SECAM D/K PAL D/K	
	Frequency	Channel	Frequency	Channel
VHF (low)	49 MHz to 65 MHz	FB, FC1, FC	49 MHz to 94 MHz	R1 to R5
VHF (high)	104 MHz to 300 MHz	F1 to F6 B to Q	104 MHz to 300 MHz	R6 to R12 S1 to S20
Hyper	300 MHz to 470 MHz	S21 to S41	302 MHz to 470 MHz	S21 to S41
UHF	470 MHz to 862 MHz	21 to 69	470 MHz to 862 MHz	E21 to E69

STEREO
B/G - A2
I - NICAM
L - NICAM
B/G - NICAM
D/K - NICAM

Tuner (digital)

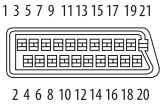
Receiving system .....DVB-T (2 K / 8 K COFDM)
Tuner VHF/UHF
..... VHF band III (174 MHz to 230 MHz)
..... UHF band IV, V (470 MHz to 862 MHz)
Auto Channel Preset .....999 ch, Auto Preset, Auto Label, Auto Sort
Audio .....Stereo MPEG layer I/II
Audio Decoder
.....Sampling frequencies: 32 kHz, 44.1 kHz, 48 kHz

This product's digital tuner has been confirmed for use in the following countries: Belgium, France, Germany, Italy, Spain, Denmark, Finland, Netherlands, Sweden, Switzerland, UK.

Input/Output

Antenna
..... 75 Ω IEC 169-2 connector for VHF/UHF in/out (analog)
..... 75 Ω IEC 169-2 connector for VHF/UHF in/out (digital)
Video input ..... AV2 (Input 1), Input 2 (front), Input 3 (rear)
Input level ..... 1 Vp-p (75 Ω)
Jacks ..... AV connector (Input 1), RCA jack (Input 2, Input 3)
Video output ..... AV1, Output
Output level ..... 1 Vp-p (75 Ω)
Jacks ..... AV connector (AV1), RCA jack (Output)
S-Video input ..... AV2 (Input 1), Input 2 (front), Input 3 (rear)
Y (luminance) - Input level ..... 1 Vp-p (75 Ω)
C (colour) - Input level ..... 300 mVp-p (75 Ω)
Jacks ..... AV connector (Input 1), 4 pin mini DIN (Input 2, Input 3)
S-Video output ..... AV1, Output
Y (luminance) - Output level ..... 1 Vp-p (75 Ω)
C (colour) - Output level ..... 300 mVp-p (75 Ω)
Jacks ..... AV connector (AV1), 4 pin mini DIN (Output)
Component video output
Output level ..... Y: 1.0 Vp-p (75 Ω)
P_B, P_R: 0.7 Vp-p (75 Ω)
Jacks ..... RCA jacks
RGB input ..... AV2 (Input 1)
Input level ..... 0.7 Vp-p (75Ω)
Jacks ..... AV connector (Input 1)
RGB output AV1
Output level ..... 0.7 Vp-p (75 Ω)
Jacks ..... AV connector (AV1)
Audio input ..... AV2 (Input 1), Input 2 (front), Input 3 (rear) L/R
During audio input ..... 2 V rms (Input impedance: more than 22 kΩ)
Jacks ..... AV connector (Input 1), RCA jacks (Input 2)
Audio output ..... AV1, Output
During audio outpu ..... 2 V rms (Output impedance: less than 1.5 kΩ)
Jacks ..... AV connector (AV1), RCA jacks (Output)
Control input ..... Mini jack
Digital audio output ..... Coaxial
G-LINK™ ..... Mini jack
Common Interface ..... CA module
DV input ..... 4 pin (front) (i.LINK/IEEE 1394 standard)
USB ..... Type A (front), Type B (front)
HDMI ..... 19 pin

AV Connectors (21-pin connector assignment)
AV connector input/output ..... 21-pin connector
This connector provides the video and audio signals for connection to a compatible colour TV or monitor.



PIN no.	AV1 (RGB)-TV / AV2 (INPUT 1/DECODER)
1	Audio 2/R out / Audio 2/R out
2	– / Audio 2/R in
11	G out / G in
3	Audio 1/L out / Audio 1/L out
6	– / Audio 1/L in
15	R or C out / R or C in
4	GND
17	GND
7	B out / B in
19	Video out or Y out / Video out
20	– / Video in or Y in
8	Status
21	GND

Supplied accessories

Remote control 1
Dry cell batteries (AA/R6P) 2
Audio/Video cable (red/white/yellow) 1
G-LINK™ cable 1
RF antenna cable 2
Power cable 1
Operating Instructions
Warranty card 1

Note: The specifications and design of this product are subject to change without notice, due to improvement.

This product includes FontAvenue® fonts licenced by NEC Corporation. FontAvenue is a registered trademark of NEC Corporation.

Microsoft product screen shots reprinted with permission from Microsoft Corporation.

2.3 DISC/CONTENT FORMAT

	HDD	DVD-R		DVD-RW		DVD+R	DVD +RW	DVD-RAM
Marks used in this manual	HDD	DVD (VR) *1	DVD (Video)	DVD (VR) *1	DVD (Video) *2	DVD+R	DVD+RW	DVD-RAM *13, 16
Logos	HDD HARD DISK DRIVE	DVD R		DVD RW	DVD RW RW 2	RW DVD+R	RW DVD+ReWritable RW DVD+ReWritable High Speed	DVD RAM
Re-recordable/ Erasable	●	*3	*3	●	●	*3	● *14	●
Editing of recorded programmes	●	●	● *4	●	● *4	● *4	● *4	●
Recording of Copy-once protected material	●	● *12		● *12				● *12
Playback in other players/recorders	n/a	*5	● *6	*7	● *6	● *6, 15	● *8	● *9
Chase play	●							
16:9 and 4:3 programme recording	●	●		●				●
Bilingual broadcast recording of both audio channels	● *10, 11	● *11		● *11				● *11

Notes to table

*1 Must be initialized for VR mode recording.
*2 Must be initialized for Video mode recording.
*3 Erasable, but free space does not increase.
*4 Cannot erase sections, edit chapters or use playlist editing.
*5 Must be compatible with DVD-R(VR) playback.
*6 Finalize using this recorder (may not playback in some units).
*7 Must be compatible with DVD-RW(VR) playback.
*8 Must be compatible with DVD+RW playback.
*9 Must be compatible with DVD-RAM playback.
*10 Only when HDD Recording Format is set to Video Mode Off.
*11 Only when the recording mode is not set to LPCM.
*12 CPRM-compatible discs only.
*13 Take the disc out of the cartridge before use. Only Panasonic and Maxell discs have been tested to work reliably with this recorder. Discs from other makers may become unusable when recorded or edited.
*14 Erasing a title does not increase the available recording time, nor increase the number of recordable titles left.
*15 Must be compatible with DVD+R playback.
*16 Depending on the disc, it may have to be initialized before it can be recorded. In this case, initialization will take about an hour.

DVD is a trademark of DVD Format/Logo Licensing Corporation.

Using DVD-R DL/DVD+R DL discs

DVD-R DL (Dual-Layer) and DVD+R DL (Double-Layer) discs contain two recordable layers on a single side, giving about 1.8 times the recording capacity of a conventional single-layer disc. This unit can record to both DVD-R DL and DVD+R DL discs.

- If you intend to play DVD-R DL (Video mode) or DVD+R DL discs recorded on this unit on other DVD recorders/players, you must finalize them. (Note that some DVD recorders/players may not play even finalized DL discs.)
- This logo indicates that the disc is a DVD-R DL or DVD+R DL disc:

Correct operation has been confirmed for DL discs:

- DVD-R DL ver. 3.0/2x to 4x
  Mitsubishi Kagaku Media (Verbatim)
- DVD-R DL ver. 3.0/2x to 8x
  Mitsubishi Kagaku Media (Verbatim)
  That's
  JVC
- DVD+R DL 2.4x
  Mitsubishi Kagaku Media (Verbatim)
  RICOH
- DVD+R DL 2.4x to 8x
  Mitsubishi Kagaku Media (Verbatim)
  RICOH

About DualDisc playback

A DualDisc is a new two -sided disc, one side of which contains DVD content –video, audio, etc. –while the other side contains non-DVD content such as digital audio material.

The non-DVD, audio side of the disc is not compliant with the CD Audio specification and therefore may not play.

It is possible that when loading or ejecting a DualDisc, the opposite side to that being played will be scratched. Scratched discs may not be playable.

The DVD side of a DualDisc plays in this product. DVD-Audio content will not play.

For more detailed information on the DualDisc specification, please refer to the disc manufacturer or disc retailer.

Other disc compatibility

In addition to DVD, this recorder is compatible with a wide range of disc types (media) and formats. Playable discs will generally feature one of the logos on the disc and/or disc packaging shown below. Note however that some disc types, such as recordable CD (and DVD), may be in an unplayable format — see below for further compatibility information.

CD-R/-RW compatibility

This recorder cannot record CD-R or CD-RW discs.

- Readable formats: CD-Audio, Video CD/ Super VCD, ISO 9660 CD-ROM* containing MP3, WMA, JPEG or DivX files
  * ISO 9660 Level 1 or 2 compliant. CD physical format: Mode1, Mode2 XA Form1. Romeo and Joliet file systems are both compatible with this recorder.
- Multi-session playback: Yes (except CD-Audio and Video CD/Super VCD)
- Unfinalized disc playback: CD-Audio only

Compressed audio compatibility

- Compatible media: DVD-ROM, DVD-R/-RW, DVD+R/+RW, DVD-RAM, CD-ROM, CD-R, CD-RW, USB
- Compatible formats: MPEG-1 Audio Layer 3 (MP3), Windows Media Audio (WMA)

- Sampling rates: 32 kHz, 44.1 kHz or 48 kHz
- Bit-rates: Any (128 kbps or higher recommended)
- Variable bit-rate (VBR) MP3 playback: Yes
- VBR WMA playback: No
- WMA encoder compatibility: Windows Media Codec 8 (files encoded using Windows Media Codec 9 may be playable but some parts of the specification are not supported; specifically, Pro, Lossless, Voice and VBR)
- DRM (Digital Rights Management)[1] file playback: No
- File extensions: .mp3, .wma (these must be used for the recorder to recognize MP3 and WMA files – do not use for other file types)
- File structure: Up to 99 folders/999 files (if these limits are exceeded, only files and folders up to these limits are playable)

WMA (Windows Media™ Audio) compatibility

This recorder can playback Windows Media Audio content.

WMA is an acronym for Windows Media Audio and refers to an audio compression technology developed by Microsoft Corporation. WMA content can be encoded by using Windows Media Player for Windows XP, Windows Media Player 9 or Windows Media Player 10 series.

Windows Media is a trademark of Microsoft Corporation.

This product includes technology owned by Microsoft Corporation and cannot be used or distributed without a license from Microsoft Licensing, Inc.

DivX video compatibility

DivX is a compressed digital video format created by the DivX® video codec from DivX, Inc. This recorder can play DivX video files burned on CD-R/-RW/-ROM discs. Keeping the same terminology as DVD-Video, individual DivX video files are called “Titles”. When naming files/titles on a CD-R/-RW disc prior to burning, keep in mind that by default they will be played in alphabetical order.

- Official DivX® Certified product.
- Plays all versions of DivX® video (including DivX® 6) with standard playback of DivX® media files.
- File extensions: .avi and .divx (these must be used for the recorder to recognize DivX video files).Note that all files with the .avi extension are recognized as MPEG4, but not all of these are necessarily DivX video files and therefore may not be playable on this recorder.
- File structure: Up to 99 folders or 999 files.

DivX, DivX Certified, and associated logos are trademarks of DivX, Inc. and are used under license.

Note

1 DRM (digital rights management) copy protection is a technology designed to prevent unauthorized copying by restricting playback, etc. of compressed audio files on devices other than the PC (or other recording equipment) used to record it. For detailed information, please see the instruction manuals or help files that came with your PC and/or software.

DivX® VOD content

In order to play DivX VOD (video on demand) content on this recorder, you first need to register the recorder with your DivX VOD content provider. You do this by generating a DivX VOD registration code, which you submit to your provider.

Some DivX VOD content may only be playable a fixed number of times. When you load a disc containing this type of DivX VOD content, the remaining number of plays is shown on-screen and you then have the option of playing the disc (thereby using up one of the remaining plays), or stopping. If you load a disc that contains expired DivX VOD content (for example, content that has zero remaining plays), the message **Rental Expired** is displayed.

If your DivX VOD content allows an unlimited number of plays, then you may load the disc into your recorder and play the content as often as you like, and no message will be displayed.

Important

- DivX VOD content is protected by a DRM system. This restricts playback of content to specific, registered devices.
- If you load a disc that contains DivX VOD content not authorized for this recorder, the message **Authorization Error** is displayed and the content will not play.
- Resetting the recorder will not cause you to lose your registration code.

JPEG file compatibility

- Compatible formats: Baseline JPEG and EXIF 2.2* still image files
  * File format used by digital still cameras
- Sampling ratio: 4:4:4, 4:2:2, 4:2:0
- Horizontal resolution: 160 to 5120 pixels
- Vertical resolution: 120 to 3840 pixels
- Progressive JPEG compatible: No
- File extensions: .jpg, .jpeg, .jpe, .jif, .jfif (must be used for the recorder to recognize JPEG files – do not use for other file types)
- File structure: The recorder can load up to 99 folders/999 files at one time (if there are more files/folders that this on the disc then more can be reloaded)

PC-created disc compatibility

Discs recorded using a personal computer may not be playable in this unit due to the setting of the application software used to create the disc. In these particular instances, check with the software publisher for more detailed information.

Discs recorded in packet write mode (UDF format) are not compatible with this recorder.

Check the DVD-R/-RW or CD-R/-RW software disc boxes for additional compatibility information.

Dolby Digital

Manufactured under license from Dolby Laboratories. “Dolby” and the double-D symbol are trademarks of Dolby Laboratories.

DTS

“DTS” and “DTS Digital Out” are registered trademarks of DTS, Inc.

DVB

The Digital Video Broadcasting Project, or DVB for short, is a set of open standards for digital broadcasting, covering terrestrial, cable and satellite broadcasts.

Based around the MPEG-2 coding system, these open standards ensure that compliant systems are able to work together, independent of manufacturer.

DVB is extremely flexible, being able to deliver virtually any kind of digital content to the home, including High Definition and Standard Definition TV, broadband multimedia content and interactive services.

DVB is a registered trademark of the DVB Project.

About the internal hard disk drive

The internal hard disk drive (HDD) is a fragile piece of equipment. When used without the proper care or in the wrong conditions, it is possible that recorded contents may be damaged or lost entirely, in some cases making even normal playback or recording impossible. Please understand that in the event of repair or replacement of the HDD or related components, all your HDD recordings will be lost.

Please use the recorder following the guidelines below to protect against possible HDD failure.

The HDD should not be regarded as a place to store recordings permanently. We recommend that you back up your important recordings onto DVD discs in order to protect against accidental loss.

Pioneer cannot under any circumstances accept responsibility for any direct or indirect loss arising from any inconvenience or loss of recorded material resulting from HDD failure.

- Do not move the recorder while it is on (this includes during EPG download when the display shows **EPG**).
- Install and use the recorder on a stable, level surface.
- Do not block the rear vent/cooling fan.
- Do not use the recorder in excessively hot or humid places, or in places that may be subject to sudden changes in temperature. Sudden changes in temperature can cause condensation to form inside the recorder. This can be a cause of HDD failure.
- While the recorder is switched on (including during EPG download when the display shows **EPG**), do not unplug from the wall socket or switch the electricity off from the breaker switch.
- Do not move the recorder immediately after switching it off. If you need to move the recorder, please follow the steps below:

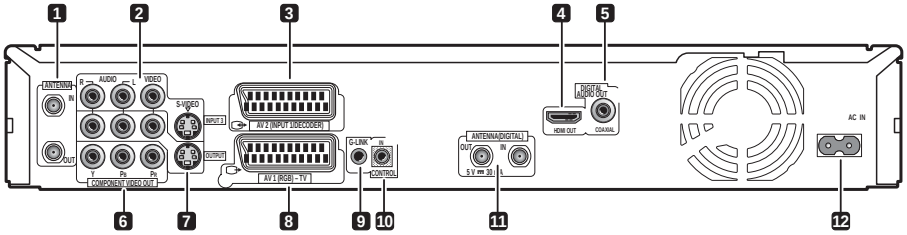
  1 After the message **POWER OFF** is shown on the front panel display, wait at least two minutes.

  2 Unplug from the wall socket.

  3 Move the recorder.
- If there's a power failure while the recorder is on there is a chance that some data on the HDD will be lost.
- The HDD is very delicate. If used over time in an improper manner or in an unsuitable environment, it is possible that the HDD will fail. Signs of problems include playback unexpectedly freezing and noticeable block noise (mosaic) in the picture. However, sometimes there will be no warning signs of HDD failure. If the HDD fails, no playback of recorded material will be possible. In this case it will be necessary to replace the HDD unit.

2.4 PANEL FACILITIES

◆Rear Panel



1 ANTENNA IN (RF IN)/OUT
Connect your TV antenna to the **ANTENNA IN (RF IN)** jack. The signal is passed through to the **ANTENNA OUT** jack for connection to your TV.

2 INPUT 3
Stereo analog audio, video and S-video inputs for connection to a VCR or other source component.

3 AV2 (INPUT 1/DECODER) AV connector
Audio/video input/output SCART-type AV connector for connecting to a VCR, or other equipment with a SCART connector. The input accepts video, S-video and RGB.

4 HDMI OUT
HDMI output for high quality digital audio and video.

5 DIGITAL AUDIO OUT (COAXIAL)
Coaxial digital audio jack for connecting to an AV amplifier/receiver, Dolby Digital/DTS/MPEG decoder or other equipment with a digital input.

6 COMPONENT VIDEO OUT
A high-quality video output for connecting to a TV or monitor with a component video input.

7 OUTPUT
Stereo analog audio, video and S-video outputs for connection to a TV or AV amplifier/receiver.

8 AV1 (RGB)-TV AV connector
Audio/video output SCART-type AV connector for connecting to a TV or other equipment with a SCART connector. The video output is switchable between video, S-video and RGB.

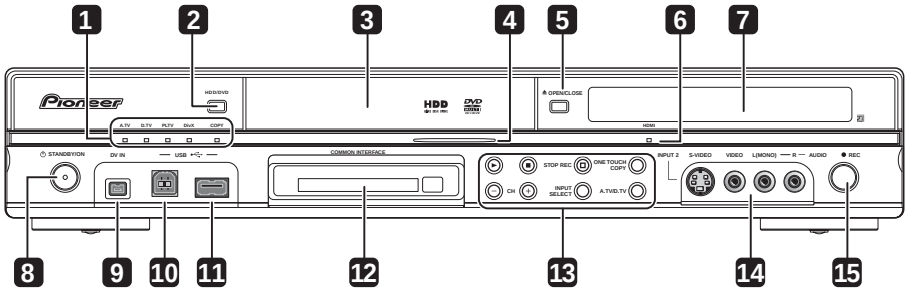
9 G-LINK™
Use to connect the supplied G-LINK™ cable to enable GUIDE Plus+® to control an external satellite receiver, etc.

10 CONTROL IN
Use to control this recorder from the remote sensor of another Pioneer component with a **CONTROL OUT** terminal and bearing the Pioneer mark. Connect the **CONTROL OUT** of the other component to the **CONTROL IN** of this recorder using a mini-plug cord.

11 ANTENNA (DIGITAL) IN/OUT
Connect your DTV antenna to the **ANTENNA (DIGITAL) IN** jack. The signal is passed through to the **ANTENNA (DIGITAL) OUT** jack for connection to your TV.

12 AC IN – Power inlet

◆Front panel



1 A.TV indicator
Lights when analog TV is selected.

D.TV indicator
Lights when digital TV is selected.

PLTV indicator
Lights during recording started using the Pause Live TV feature.

DivX indicator
Lights during DivX playback.

COPY indicator
Lights when copying is underway.

2 HDD/DVD
Press to switch between HDD and DVD for recording and playback.

3 Disc tray

4 HDD/DVD indicator
Indicator lights blue when the hard disk (HDD) is selected; orange when the DVD drive is selected.

5 ⏏ OPEN/CLOSE
Press to open/close the disc tray.

6 HDMI indicator
Lights when this recorder is connected to HDMI (HDCP) compatible component.

7 Front panel display and IR remote sensor

8 ⏻ STANDBY/ON
Press to switch the recorder on/into standby.

9 DV IN
A DV input i.LINK connector, suitable for connecting a DV camcorder.

10 USB port (Type B)
USB port for connecting a PictBridge-compatible printer or PC.

11 USB port (Type A)
USB port for connecting a digital camera, keyboard or other USB device.

12 COMMON INTERFACE slot
Slot for CA module and smart card used to decode scrambled D.TV channels.

13 ►

Press to start or restart playback.

■

Press to stop playback.

□ STOP REC

Press to stop recording.

ONE TOUCH COPY

Press to start One Touch Copy of the currently playing title to DVD or the HDD.

CH +/–

Use to change channels, skip chapters/ tracks, etc.

INPUT SELECT

Press to change the input used for recording.

A.TV/D.TV

Switches between analog TV antenna input and digital TV antenna input. The **A.TV** and **D.TV** indicators show which is selected.

14 INPUT 2

Audio/video input (stereo analog audio; composite and S-video), especially suitable for camcorders, game consoles, portable audio, etc.

15 ● REC

Press to start recording. Press repeatedly to set the recording time in 30 minute blocks.

Common Interface

To receive scrambled D.TV channels you will need a CA module and smart card provided by your service provider.

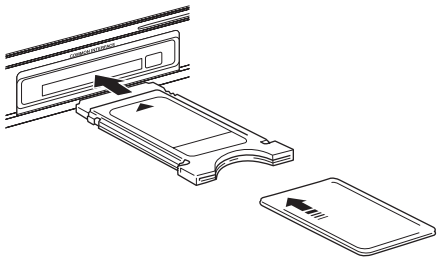
Different CA modules support different encryption systems. This recorder is designed to work with modules that support the DVB standard. Contact your service provider to obtain the right kind of CA module.

Note that neither CA modules nor smart cards are supplied or sold by Pioneer.

Inserting a CA module

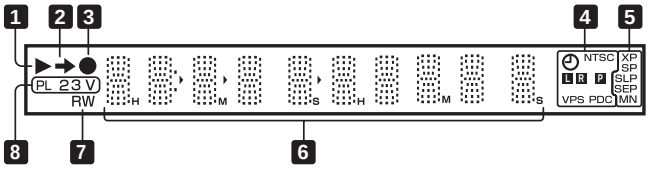
The Common Interface card slot is located on the front panel of the recorder.

- **Insert the CA module into the card slot as far as it will go.**



The Common Interface card slot accepts Type I and Type II PC Cards (PCMCIA cards).

◆ Display



1 ▶
Lights during playback; blinks when playback is paused.

2 ➡
Lights when copying.

3 ●
Lights during recording; blinks when recording is paused.

4 ⏲
Lights when a timer recording has been set. (Indicator blinks if the timer has been set to DVD but there isn't a recordable disc loaded, or the timer has been set to record to the HDD but the HDD is not recordable.)

NTSC
Lights when the video output signal format is NTSC.

L R
Indicates which channels of a bilingual broadcast are recorded.

P
Lights when the component video output is set to progressive scan.

VPS/PDC
Lights when receiving a VPS/PDC broadcast during a VPS/PDC-enabled timer recording.

5 Recording quality indicators

XP
Lights when the recording mode is set to **XP** (high quality).

SP
Lights when the recording mode is set to **SP** (standard play).

LP/SLP
Lights when the recording mode is set to **LP** (long play) or **SLP** (super-long play).

EP/SEP
Lights when the recording mode is set to **EP** (extended play) or **SEP** (super-extended play).

MN
Lights when the recording mode is set to **MN** (manual recording level) mode.

6 Character display

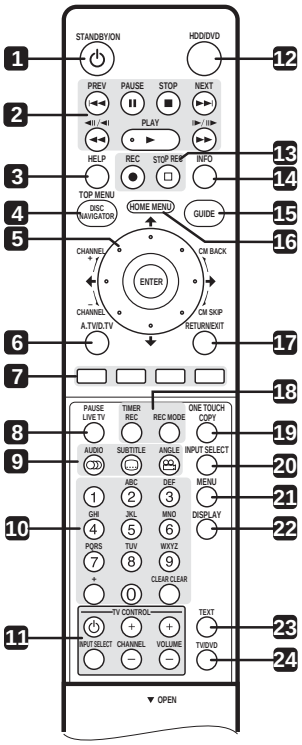
7 R/RW
Lights when a recordable DVD-R or DVD-RW disc is loaded.

8 PL
Lights when a VR mode disc is loaded and the recorder is in Play List mode.

2 3
Shows the remote control mode (if nothing is displayed, the remote control mode is 1).

V
Lights when an unfinalized Video mode disc is loaded.

◆Remote Control Unit



1 ⏻ STANDBY/ON
Press to switch the recorder on/into standby.

2 ► PLAY
Press to start playback.

II PAUSE
Press to pause playback or recording.

■ STOP
Press to stop playback.

I◄◄ PREV ►►I NEXT
Press to skip to the previous or next title/chapter/track/folder; or to display the previous or next menu page.

When GUIDE Plus+® is displayed, use to display the previous/next page.

◄◄ ►►
Press to start reverse or forward scanning. Press again to change the speed.

◄II/◄I I►/II►
While paused, press and hold to start slow-motion playback. Press repeatedly to change the playback speed.

While paused, press to advance a single frame in either direction.

When GUIDE Plus+® is displayed, use to display the previous/next day.

3 HELP
Press for help on how to use the current GUI screen.

4 DISC NAVIGATOR / TOP MENU
Press to display the Disc Navigator screen, or the top menu if a DVD-Video or finalized DVD-R/-RW (Video) disc is loaded.

5 ⬆/⬇/⬅/➡ and ENTER (Smart Jog)
Used to navigate all on-screen displays. Rotate the **Smart Jog**to move the cursor up or down. Press **ENTER** to select the currently highlighted option.

When using the **Smart Jog**, turn it lighty to avoid pressing down on the cursor keys.

While watching D.TV press **ENTER** to display the Channel List screen.

Rotate the **Smart Jog** when playback is paused to do a frame-by-frame search back/forward.

CM BACK (commercial back)
Turn the **Smart Jog** counter-clockwise during playback to skip progressively backward through the video playing.

CM SKIP (commercial skip)
Turn the **Smart Jog** clockwise during playback to skip progressively forward through the video playing.

CHANNEL +/–
While stopped, turn the **Smart Jog** to change the channel of the built-in TV tuner.

6 A.TV/D.TV
Press to switch between analog TV antenna input and digital TV antenna input. The **A.TV** and **D.TV** indicators on the front panel show which is selected.

7 Colour buttons (RED, GREEN, YELLOW, BLUE)
Use when an EPG screen is displayed or when tuned to a data channel of a digital broadcast. The function of each button will be described on-screen, and changes depending on the screen being displayed.

8 PAUSE LIVE TV
Press to start recording the current TV channel, but with playback paused, effectively pausing the broadcast.

9 AUDIO
Press to change the audio language or channel. (When the recorder is stopped, press to change the tuner audio.)

SUBTITLE
Press to display/change the subtitles included in multilingual DVD-Video discs.

While watching D.TV, press to change the D.TV subtitles.

ANGLE
Press to switch camera angles on discs with multi-angle scenes.

10 Number buttons, CLEAR, +
Use the number buttons for track/chapter/title selection; channel selection, and so on. The same buttons can also be used to enter names for titles, discs and so on.

Use **CLEAR** to clear an entry and start again.

11 TV CONTROL buttons
After setting up, use these controls to control your TV.

12 HDD/DVD
Press to select the hard disk (HDD) or DVD for recording and playback.

13 Recording controls

● REC
Press to start recording. Press repeatedly to set the recording time in blocks of 30 mins.

When the red action button is visible in a GUIDE Plus+® screen, use for One-Button-Record.

□ STOP REC
Press to stop recording.

14 INFO
While watching D.TV, press to display the information banner.

Press to see additional information for the highlighted item in the EPG.

15 GUIDE
Press to display the EPG screen; press again to exit.

16 HOME MENU
Press to display the Home Menu, from which you can navigate all the functions of the recorder.

17 RETURN/EXIT
Press to go back one level in the on-screen menu or display.

Also press to exit the MHEG application.

18 TIMER REC
Press to set a timer recording.

REC MODE
Press repeatedly to change the recording mode (picture quality).

19 ONE TOUCH COPY
Press to start One Touch Copy of the currently playing title to DVD or the HDD.

20 INPUT SELECT
Press to change the input to use for recording.

21 MENU
Press to display the disc menu if a DVD-Video, finalized DVD-R/-RW (Video mode) or finalized DVD+R/+RW disc is loaded.

When in the GUIDE Plus+® system, use to jump directly to the Menu bar.

22 DISPLAY
Displays/changes the on-screen information displays.

23 TEXT
Press to display Teletext information (in European countries except the UK) or to start the MHEG application display (UK only) if available during digital broadcasts.

24 TV/DVD
Press to switch between 'TV mode', in which you get the picture and sound from the TV's tuner, and 'DVD mode', in which you get picture and sound from the recorder's tuner (or an external input).

3. BASIC ITEMS FOR SERVICE

3.1 CHECK POINTS AFTER SERVICING

To keep the product quality after servicing, confirm recommended check points shown below.

No.	Procedures	Item to be checked
1	Confirm the firmware version on the first screen on Service Mode. Also check the compatibility of each firmware (OK or NG).	The version of each firmware must be the latest. All of firmware compatibility must be "OK". Update firmware to the latest one, if it is not the latest or the compatibility is "NG".
2	Confirm whether the customer complain has been solved. If the customer complain occurs with the specific disc, use it for the operation check.	The customer complain must not be reappeared. Video, audio and operations must be normal.
3	Perform the HDD physical test (Self-Test on HDD check mode).	"NG" must not be appeared.
4	Confirm playback error rates at the innermost and outermost tracks by using the following disc. DVD test disc (GGV1025)	The error rates must be less than 8.0e-4.
5	Record from the tuner (or an external source) to the HDD for 1 minute. After that, play back the content.	Video, audio and operations must be normal.
6	Copy the recorded content on the HDD in the previous step to a DVD-RW disc. After that, play back the disc.	Video, audio and operations must be normal.
7	Confirm the user setting, and whether the test-recorded content have been deleted.	Be sure to delete the test-recorded content on the HDD.
8	Check the appearance of the product.	No scratches or dirt on its appearance after receiving it for service.

See the table below for the items to be checked regarding video and audio:

Items to be checked regarding video	Item to be checked regarding audio
Block noise	Distortion
Horizontal noise	Noise
Dot noise	Volume too low
Disturbed image (video jumpiness)	Volume too high
Too dark	Volume fluctuating
Too bright	Sound interrupted
Mottled color	

◆ Necessary Procedure List When Replacing Assys

Following is the surely necessary procedures and the product state after changing, when replacing next ASSYs.

Replaced ASSY	Necessary setting	State after replacing	
		User setting	HDD contents
MAIN ASSY	1. Model setting 2. LD power adjustment 3. CPRM setting 4. Firmware update	×	○
TUSB ASSY	1. Model setting 2. CPRM setting 3. Firmware update	×	○
LOADER ASSY	1. LD power adjustment	○	○
HDD	1. CPRM setting	○	×

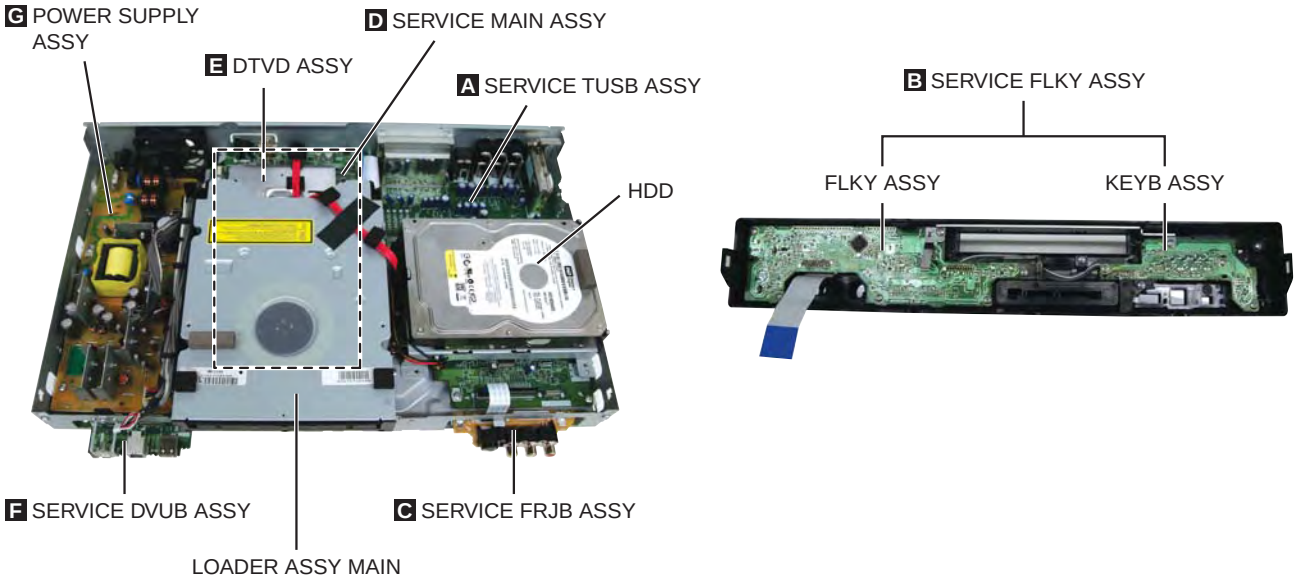
3.2 QUICK REFERENCE

Description of work	Procedure	Jigs
LD power adjustment	[ESC]+[CX]+[1]+[0]	GGF1381 : Service Remote Control Unit
		GGV1054 : CD-ROM (CDT-313)
		GGV1036 : DVD-ROM DL (DVDT-002)
		GGV1278 : Blank DVD-R (That's DR-C12WTY5PA)
		GGV1282 : Blank DVD-RW (JVC VD-W120XH5)
		GGV1284 : Blank DVD-RAM (maxell DRM120C.1P5S)
ID input	[ESC]+[STEREO]	GGF1381 : Service Remote Control Unit
		GGV1305 : ID disc
Firmware update	[REC STOP]+[PLAY]	Update disc
Version check	[ESC]+[DISP]	GGF1381 : Service Remote Control Unit
Error Rate Measurement	[ESC]+[DISP]+[DIG/ANA] × twice	GGF1381 : Service Remote Control Unit
		Operation check disc (See remarks)
HDD Check Mode	[ESC]+[CX]+[0]+[1]	GGF1381 : Service Remote Control Unit
Indication of VR-playback-related error log	[ESC]+[DISP]+[5]+[DIG/ANA]	GGF1381 : Service Remote Control Unit
Indication of VR-recording-related error log	[ESC]+[DISP]+[4]+[DIG/ANA] × 3times	GGF1381 : Service Remote Control Unit

Remarks

Disc for check of recording/playback operations (Note) When judging the drive quality, make sure to use the operation check disc.	Operation check discs (manufacturers and model numbers)	Error rate threshold
	GGV1278 : Blank DVD-R (That's DR-C12WTY5PA)	1.0e-3 or below
	GGV1279 : Blank DVD-R DL (MCM VHR21YD1)	L0 : 1.0e-3 or below
		L1 : 3.3e-3 or below
	GGV1280 : Blank DVD+R (That's DR+120TY5PA)	1.0e-3 or below
	GGV1281 : Blank DVD+R DL (MCM VTR21N1)	L0 : 1.0e-3 or below
		L1 : 3.3e-3 or below
	GGV1189 : Blank DVD-RW (JVC VD-W120N10)	1.0e-3 or below
	GGV1282 : Blank DVD-RW [RW2] (JVC VD-W120XH5)	1.0e-3 or below
	GGV1283 : Blank DVD+RW (RICOH D4RWV-S3CW)	1.0e-3 or below
	GGV1284 : Blank DVD-RAM (maxell DRM120C.1P5S)	1.0e-3 or below
	GGV1036 : DVD-ROM DL (DVDT-002)	L0/L1 : 8.0e-4 or below
How to read error rate	X.Xe-Y Y: The bigger the better, X X: The smaller the better	
How to exit from Service Mode	[ESC]	

3.3 PCB LOCATIONS



NOTES: ● *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
● *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*

◆LIST OF ASSEMBLIES

Mark	No. Description	Part No.
NSP	1.. TUJB ASSY (DVR-LX60D, DVR-LX60D-AV)	VWM2425
NSP	1.. TUJB ASSY (DVR-550HX-S)	VWM2436
	2.. SERVICE TUSB ASSY	VXX3229
	2.. SERVICE DVUB ASSY (DVR-LX60D, DVR-LX60D-AV)	VXX3231
	2.. SERVICE DVUB ASSY (DVR-550HX-S)	VXX3232
NSP	1.. FLKB ASSY (DVR-LX60D, DVR-LX60D-AV)	VWM2450
NSP	1.. FLKB ASSY (DVR-550HX-S)	VWM2435
	2.. SERVICE FLKY ASSY (DVR-LX60D, DVR-LX60D-AV)	VXX3260
	2.. SERVICE FLKY ASSY (DVR-550HX-S)	VXX3228
	3.. FLKY ASSY	
	3.. KEYB ASSY	
	2.. SERVICE FRJB ASSY	VXX3227
	1.. DTVD ASSY	VWV2303
	1.. SERVICE MAIN ASSY	VXX3241
⚠	1.. POWER SUPPLY ASSY	VWR1405

3.4 JIGS LIST

■ Jigs List

Name	Jig No.	Remarks
Service Remote Control Unit	GGF1381	Adjustment, diagnosis
DVD Test Disc (DVD-Video)	GGV1025	Check of DVD-Video
DVD Recorder Data Disc Type2	———— (*)	Diagnosis (ID data setting)
FFC Cable (40p)	GGD1436	Diagnosis of MAIN Assy
FFC Cable (28p)	GGD1517	Diagnosis of MAIN Assy
CD-ROM	GGV1054	LD Power Adjustment
DVD-ROM DL	GGV1036	LD Power Adjustment
Blank DVD-R	GGV1278	LD Power Adjustment
Blank DVD-RW	GGV1282	LD Power Adjustment
Blank DVD-RAM	GGV1284	LD Power Adjustment
Disc Ejection Rod	GGF1529	Emergency Disc Ejection
USB Cable	GGD1145	USB Check Mode
RS-232C I/F Jig	GGF1348	Serial Update
FFC Cable (7P)	VDA1681	Serial Update

(*) Be sure to use the latest disc (Type 2).
In Feb, 2007, the latest disc is GGV1305.

■ Lubricants and Glues List

Name	Lubricants and Glues No.	Remarks
Hanarl	GEM1041	refer to "9.3 FRONT PANEL SECTION"

■ Cleaning

Before shipping out the product, be sure to clean the following positions by using the prescribed cleaning tools:

Position to be cleaned	Cleaning tools
Pickup lenses	Cleaning liquid : GEM1004 Cleaning paper : GED-008

Position to be cleaned	Cleaning tools
Fans	Cleaning paper : GED-008

A

B

C

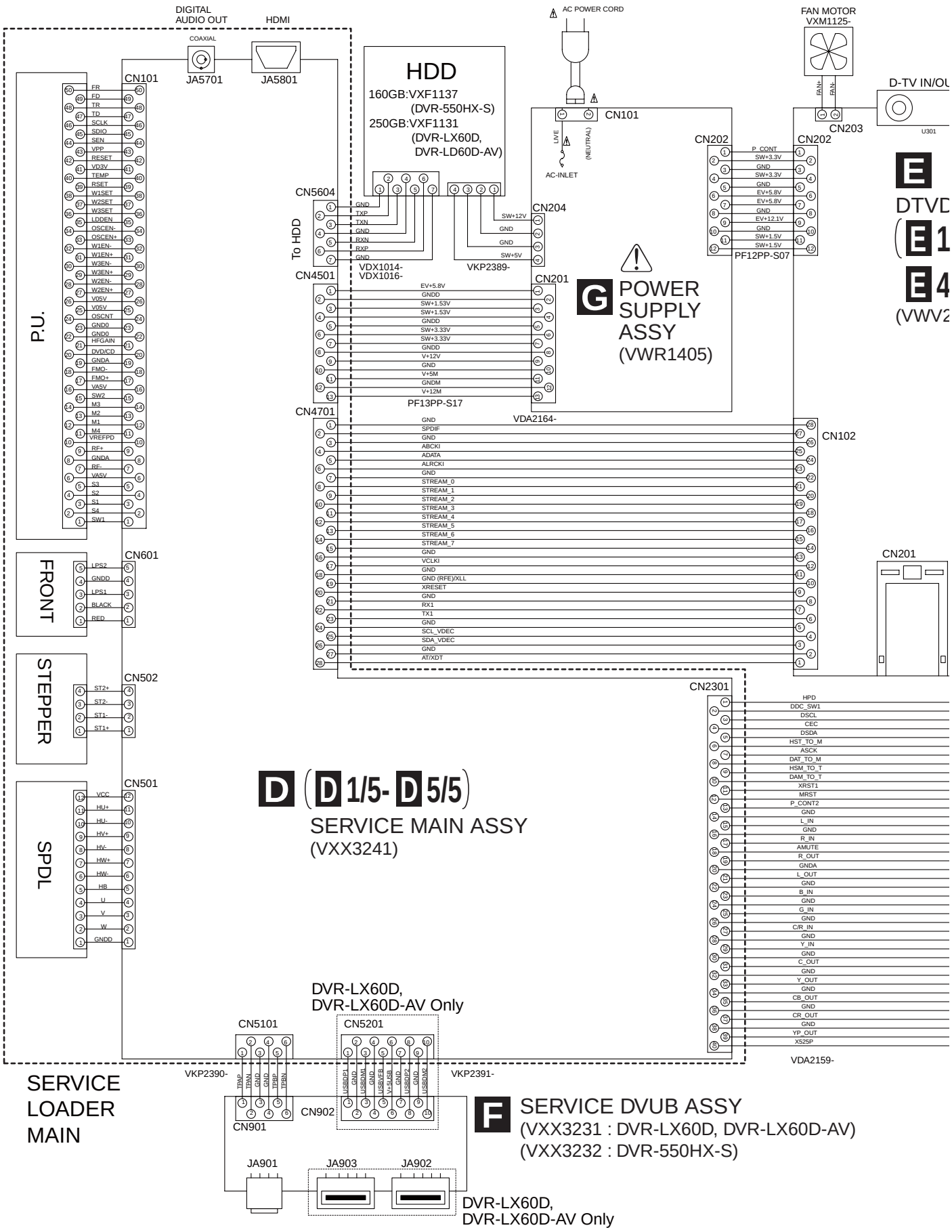
D

E

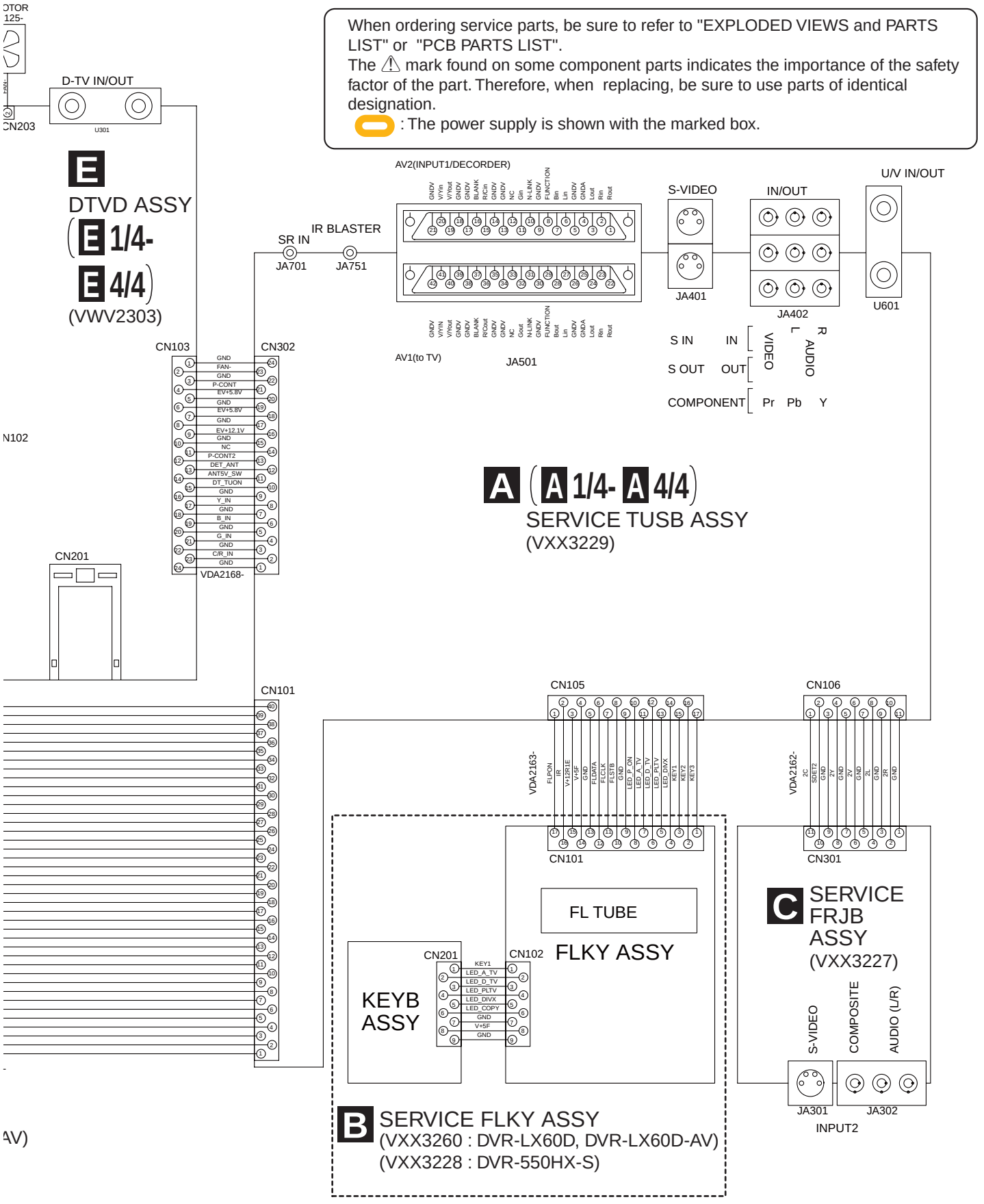
F

4. BLOCK DIAGRAM

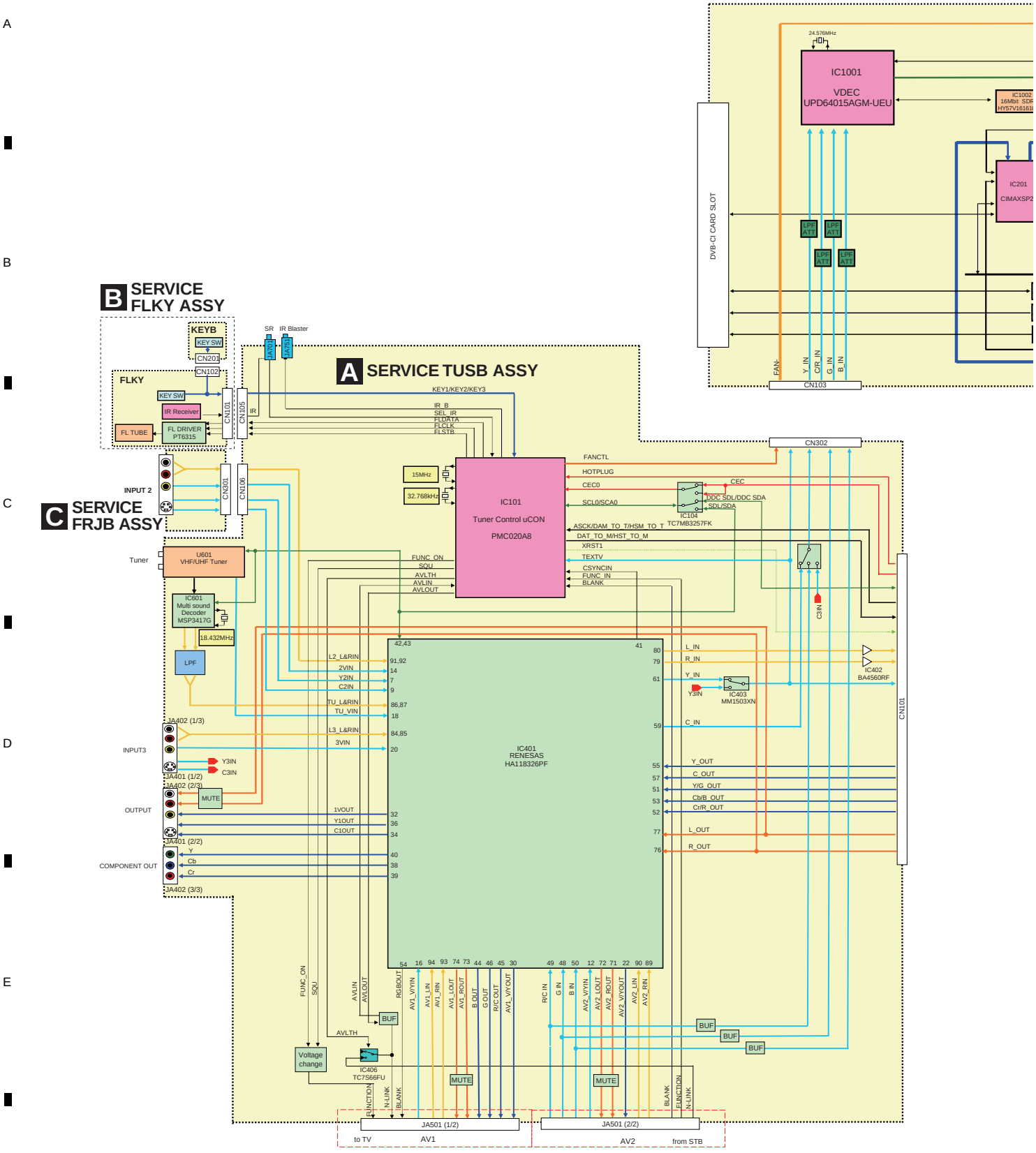
4.1 OVERALL WIRING DIAGRAM

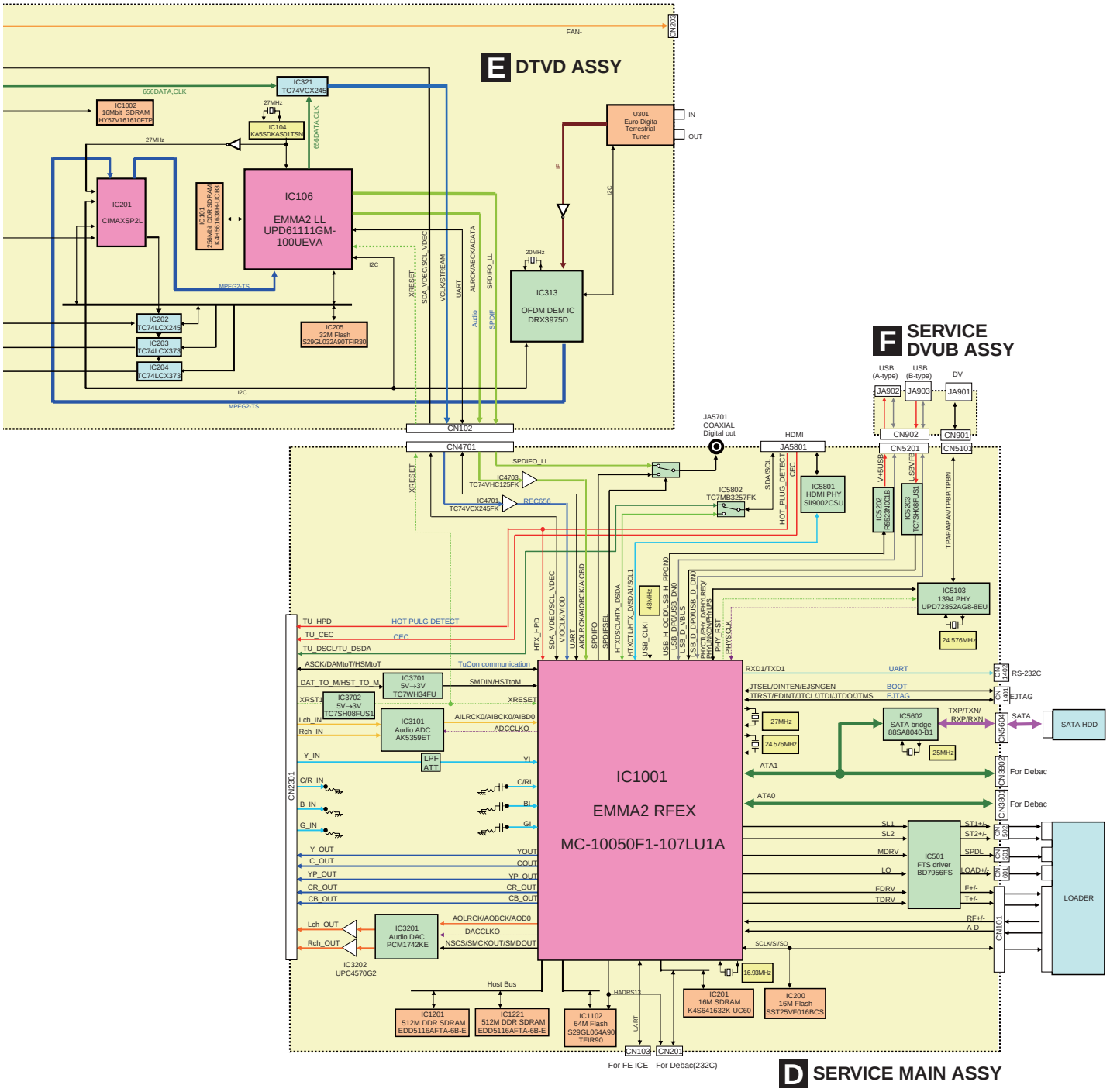


When ordering service parts, be sure to refer to "EXPLODED VIEWS and PARTS LIST" or "PCB PARTS LIST".
The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
: The power supply is shown with the marked box.

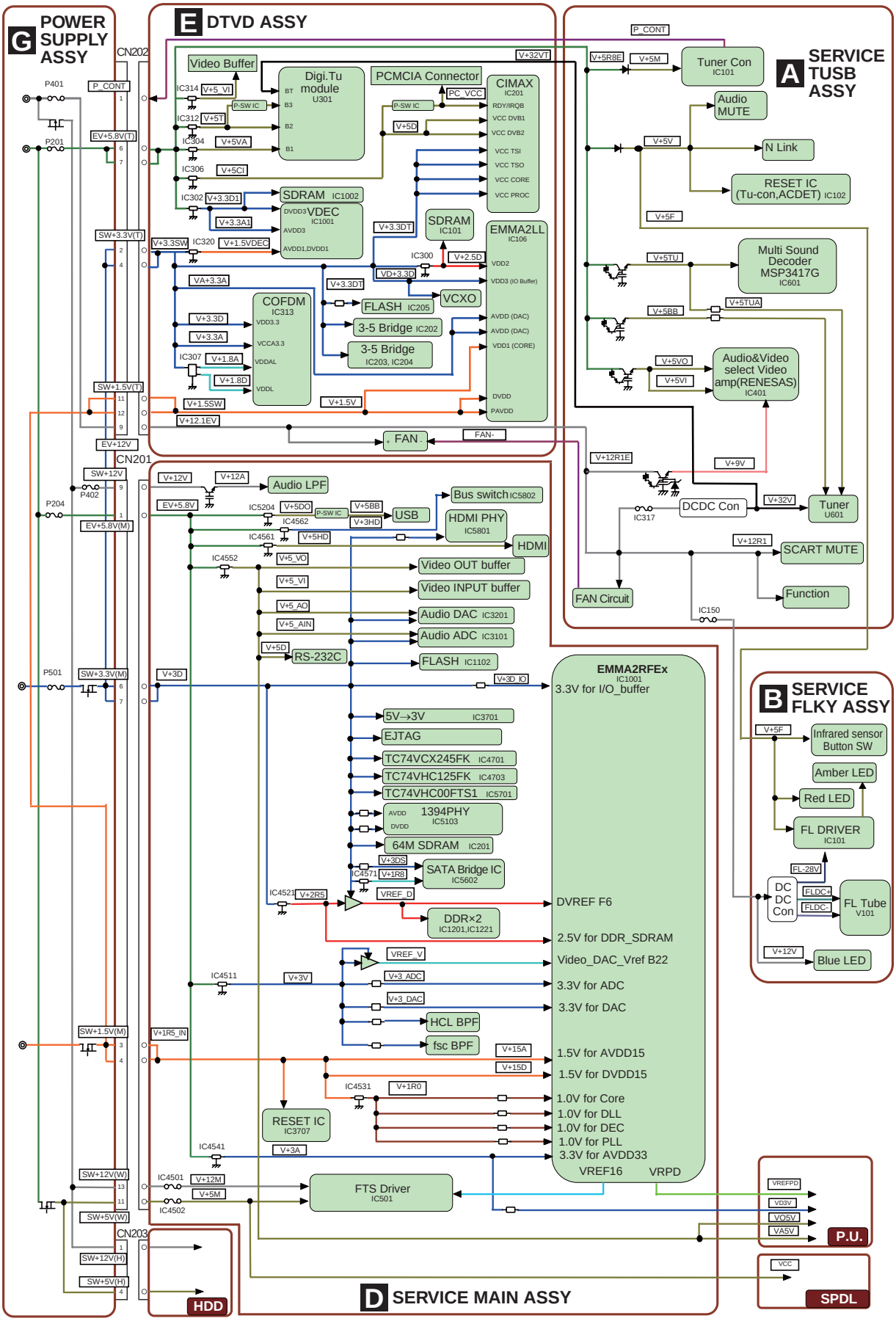


4.2 OVERALL BLOCK DIAGRAM



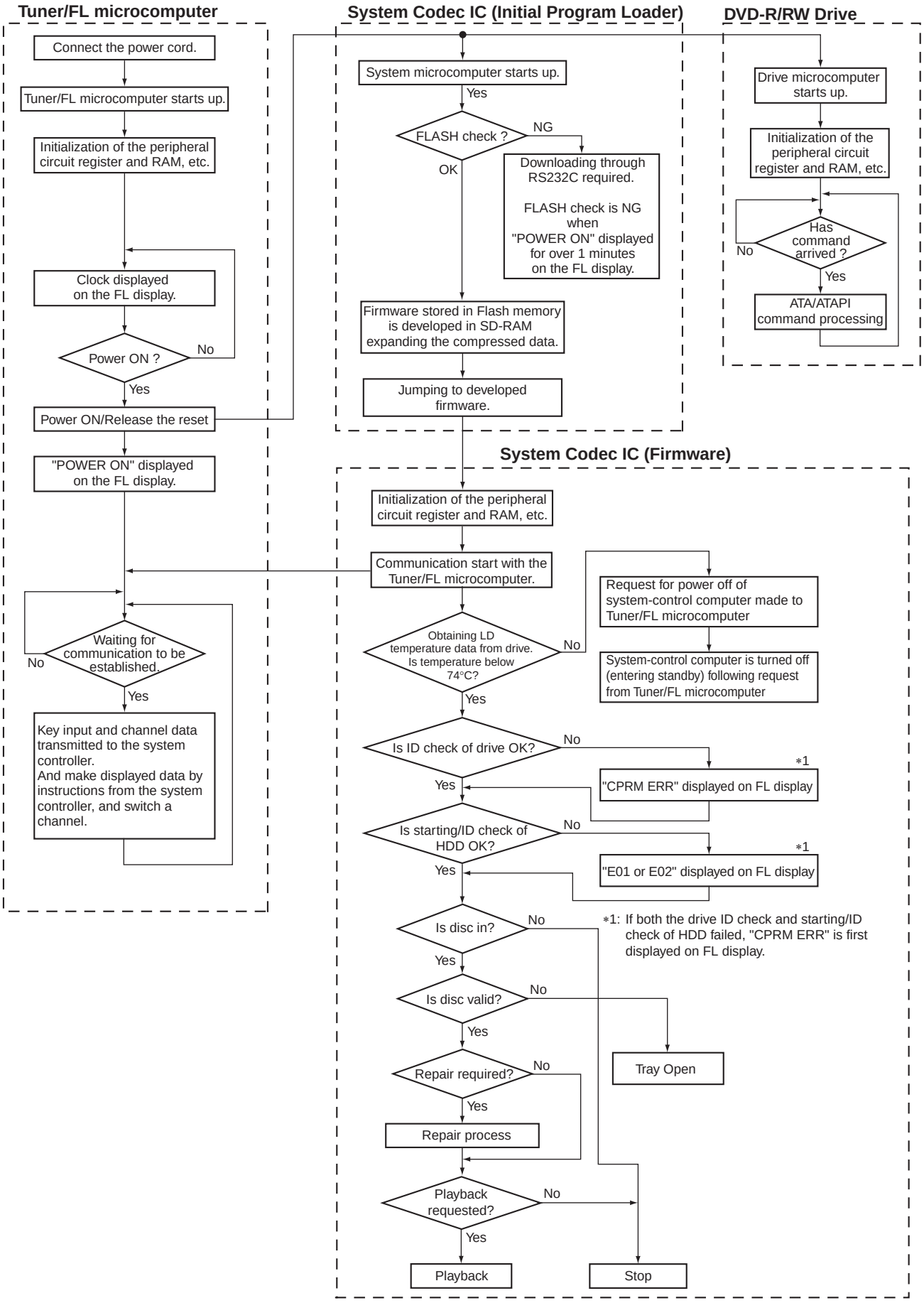

E DTVD ASSY
IC321 TC74VCX245
IC1002 16Mbit SDRAM HY57V161610FTP
IC104 KA5SDKAS01TSN
IC201 CIMAXSP2L
IC101 256Mbit DDR SDRAM K4H561638H-LCB3
IC106 EMMA2 LL UPD61111GM-100UEVA
IC202 TC74LCX245
IC203 TC74LCX373
IC204 TC74LCX373
IC205 32M Flash S29GL032A90TFIR30
IC313 OFDM DEM IC DRX3975D
U301 Euro Digita Terrestrial Tuner
CN102
CN4701
F SERVICE DVUB ASSY
CN902
CN901
CN5201
CN5101
JA902
JA903
JA901
JA5701 COAXIAL Digital out
JA5801 HDMI
IC5802 TC7MB3257FK
IC5801 HDMI PHY Sil9002CSU
IC5103 1394 PHY UPD72852AG8-8EU
24.576MHz
IC4703 TC74VHC125FK
IC4701 TC74VCX245FK
D SERVICE MAIN ASSY
IC1001
EMMA2 RFEX
MC-10050F1-107LU1A
IC3701 5V→3V TC7WH34FU
IC3702 5V→3V TC7SH08FUS1
IC3101 Audio ADC AK5359ET
IC3201 Audio DAC PCM1742KE
IC3202 UPC4570G2
IC5602 SATA bridge 88SA8040-B1
IC501 FTS driver BD7956FS
SATA HDD
LOADER
IC1201 512M DDR SDRAM EDD5116AFTA-6B-E
IC1221 512M DDR SDRAM EDD5116AFTA-6B-E
IC1102 64M Flash S29GL064A90TFIR90
IC201 16M SDRAM K4S641632K-UC60
IC200 16M Flash SST25VF016BCS
CN103
CN201
For FE ICE
For Debac(232C)
RS-232C
EJTAG
SATA
For Debac
For Debac

4.3 POWER BLOCK DIAGRAM

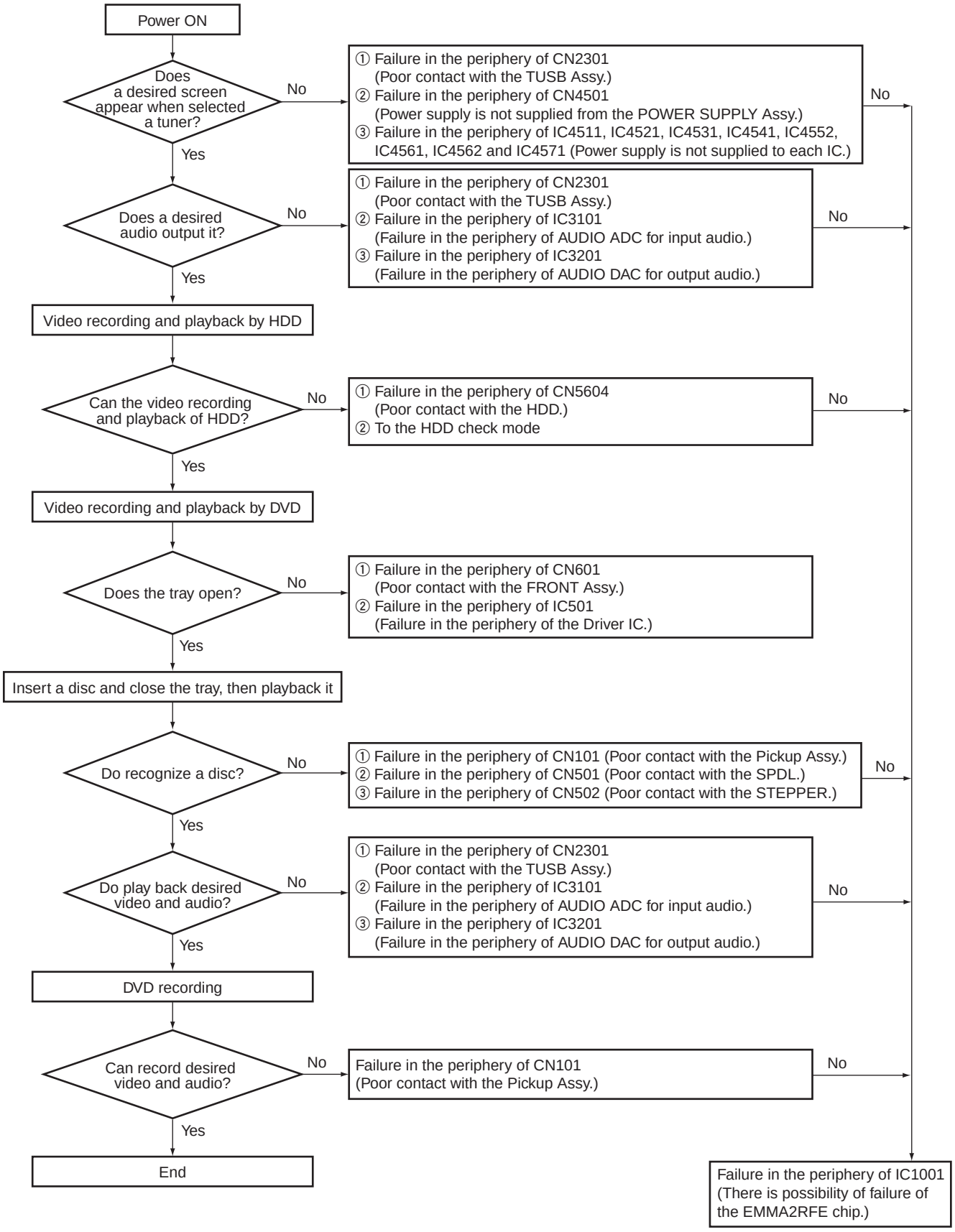


5. DIAGNOSIS

5.1 SETUP SEQUENCE


Tuner/FL microcomputer
Connect the power cord.
Tuner/FL microcomputer starts up.
Initialization of the peripheral circuit register and RAM, etc.
Clock displayed on the FL display.
Power ON ?
No
Yes
Power ON/Release the reset
"POWER ON" displayed on the FL display.
Waiting for communication to be established.
No
Yes
Key input and channel data transmitted to the system controller.
And make displayed data by instructions from the system controller, and switch a channel.
System Codec IC (Initial Program Loader)
System microcomputer starts up.
Yes
FLASH check ?
NG
OK
Downloading through RS232C required.
FLASH check is NG when "POWER ON" displayed for over 1 minutes on the FL display.
Firmware stored in Flash memory is developed in SD-RAM expanding the compressed data.
Jumping to developed firmware.
DVD-R/RW Drive
Drive microcomputer starts up.
Initialization of the peripheral circuit register and RAM, etc.
Has command arrived ?
No
Yes
ATA/ATAPI command processing
System Codec IC (Firmware)
Initialization of the peripheral circuit register and RAM, etc.
Communication start with the Tuner/FL microcomputer.
Obtaining LD temperature data from drive. Is temperature below 74°C?
No
Request for power off of system-control computer made to Tuner/FL microcomputer
System-control computer is turned off (entering standby) following request from Tuner/FL microcomputer
Yes
Is ID check of drive OK?
No
*1
"CPRM ERR" displayed on FL display
Yes
Is starting/ID check of HDD OK?
No
*1
"E01 or E02" displayed on FL display
Yes
Is disc in?
No
Yes
Is disc valid?
No
Yes
Repair required?
No
Yes
Repair process
Playback requested?
No
Yes
Playback
Tray Open
Stop
*1: If both the drive ID check and starting/ID check of HDD failed, "CPRM ERR" is first displayed on FL display.

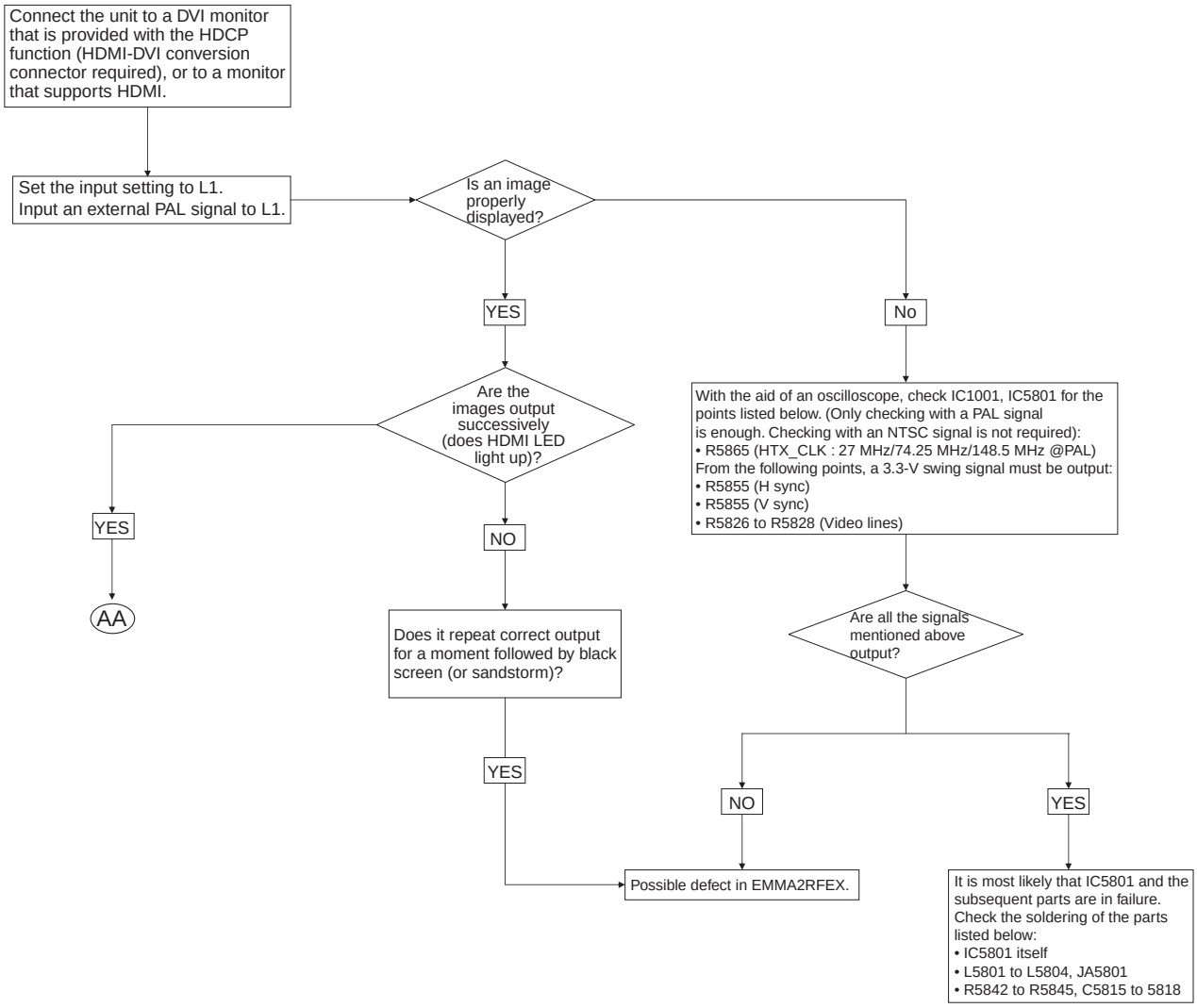
5.2 DIAGNOSIS OF THE MAIN ASSY

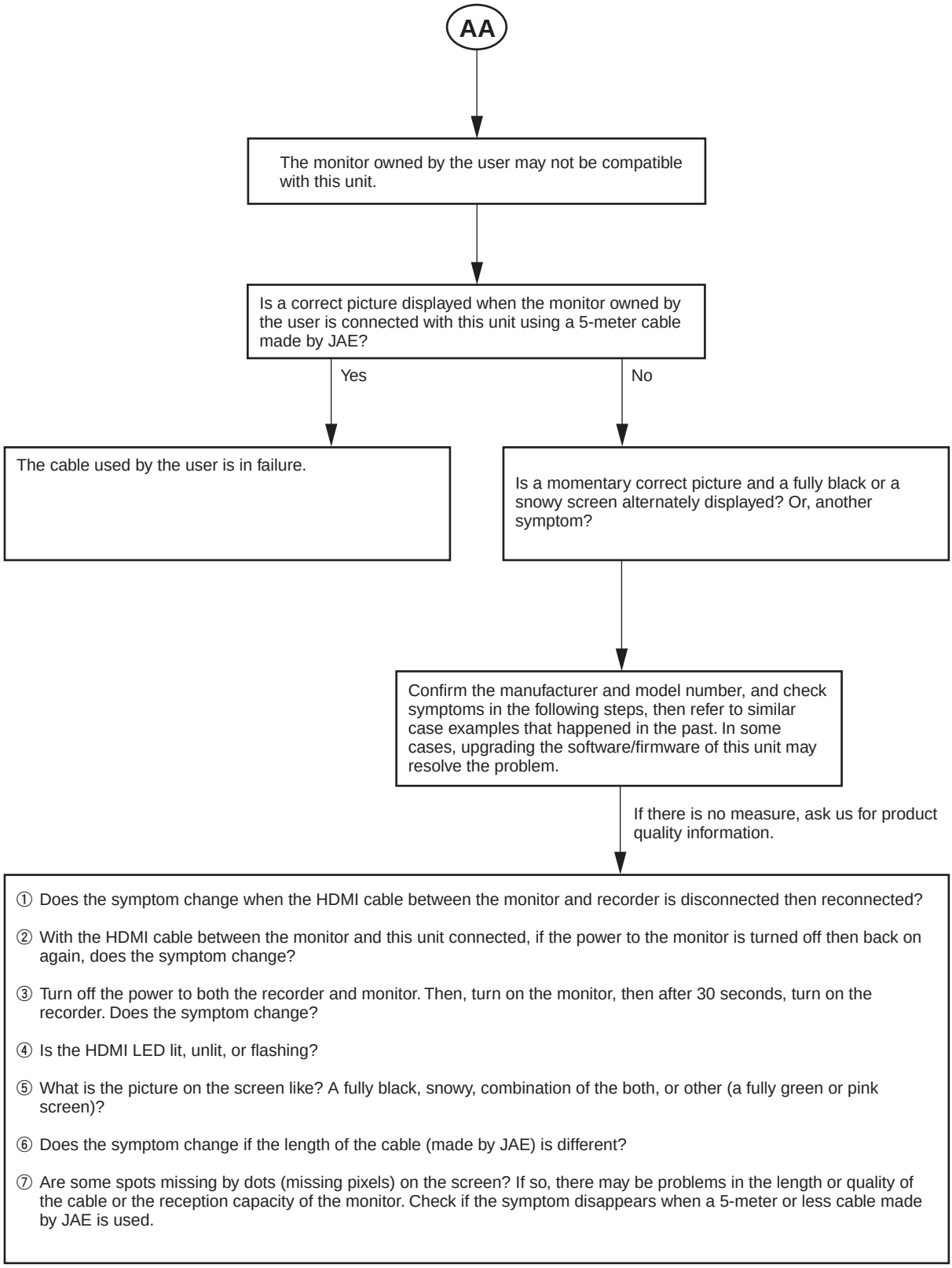

Power ON
Does a desired screen appear when selected a tuner?
No
① Failure in the periphery of CN2301 (Poor contact with the TUSB Assy.)
② Failure in the periphery of CN4501 (Power supply is not supplied from the POWER SUPPLY Assy.)
③ Failure in the periphery of IC4511, IC4521, IC4531, IC4541, IC4552, IC4561, IC4562 and IC4571 (Power supply is not supplied to each IC.)
No
Yes
Does a desired audio output it?
No
① Failure in the periphery of CN2301 (Poor contact with the TUSB Assy.)
② Failure in the periphery of IC3101 (Failure in the periphery of AUDIO ADC for input audio.)
③ Failure in the periphery of IC3201 (Failure in the periphery of AUDIO DAC for output audio.)
No
Yes
Video recording and playback by HDD
Can the video recording and playback of HDD?
No
① Failure in the periphery of CN5604 (Poor contact with the HDD.)
② To the HDD check mode
No
Yes
Video recording and playback by DVD
Does the tray open?
No
① Failure in the periphery of CN601 (Poor contact with the FRONT Assy.)
② Failure in the periphery of IC501 (Failure in the periphery of the Driver IC.)
Yes
Insert a disc and close the tray, then playback it
Do recognize a disc?
No
① Failure in the periphery of CN101 (Poor contact with the Pickup Assy.)
② Failure in the periphery of CN501 (Poor contact with the SPDL.)
③ Failure in the periphery of CN502 (Poor contact with the STEPPER.)
No
Yes
Do play back desired video and audio?
No
① Failure in the periphery of CN2301 (Poor contact with the TUSB Assy.)
② Failure in the periphery of IC3101 (Failure in the periphery of AUDIO ADC for input audio.)
③ Failure in the periphery of IC3201 (Failure in the periphery of AUDIO DAC for output audio.)
No
Yes
DVD recording
Can record desired video and audio?
No
Failure in the periphery of CN101 (Poor contact with the Pickup Assy.)
No
Yes
End
Failure in the periphery of IC1001 (There is possibility of failure of the EMMA2RFE chip.)

◆ Diagnosis of the HDMI Block

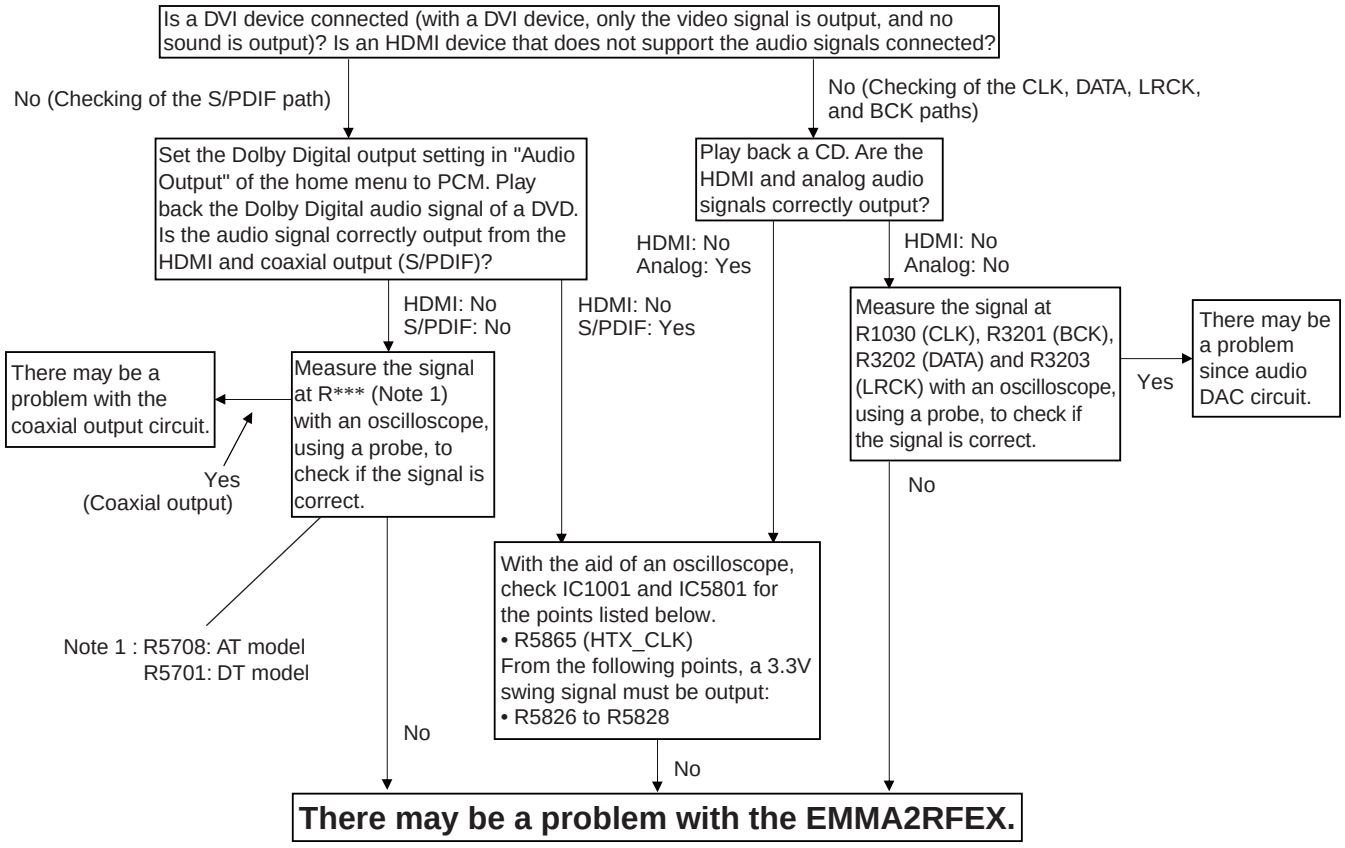
1. In a case when only the HDMI video is not outputted

*This flowchart shows how to confirm the output from the HDMI block on the basis that an external input signal to the L1 connector is through-output from the analog output connector properly.


Connect the unit to a DVI monitor that is provided with the HDCP function (HDMI-DVI conversion connector required), or to a monitor that supports HDMI.
Set the input setting to L1.
Input an external PAL signal to L1.
Is an image properly displayed?
YES
No
Are the images output successively (does HDMI LED light up)?
YES
AA
NO
Does it repeat correct output for a moment followed by black screen (or sandstorm)?
YES
Possible defect in EMMA2RFEX.
With the aid of an oscilloscope, check IC1001, IC5801 for the points listed below. (Only checking with a PAL signal is enough. Checking with an NTSC signal is not required):
• R5865 (HTX_CLK : 27 MHz/74.25 MHz/148.5 MHz @PAL)
From the following points, a 3.3-V swing signal must be output:
• R5855 (H sync)
• R5855 (V sync)
• R5826 to R5828 (Video lines)
Are all the signals mentioned above output?
NO
YES
It is most likely that IC5801 and the subsequent parts are in failure.
Check the soldering of the parts listed below:
• IC5801 itself
• L5801 to L5804, JA5801
• R5842 to R5845, C5815 to 5818

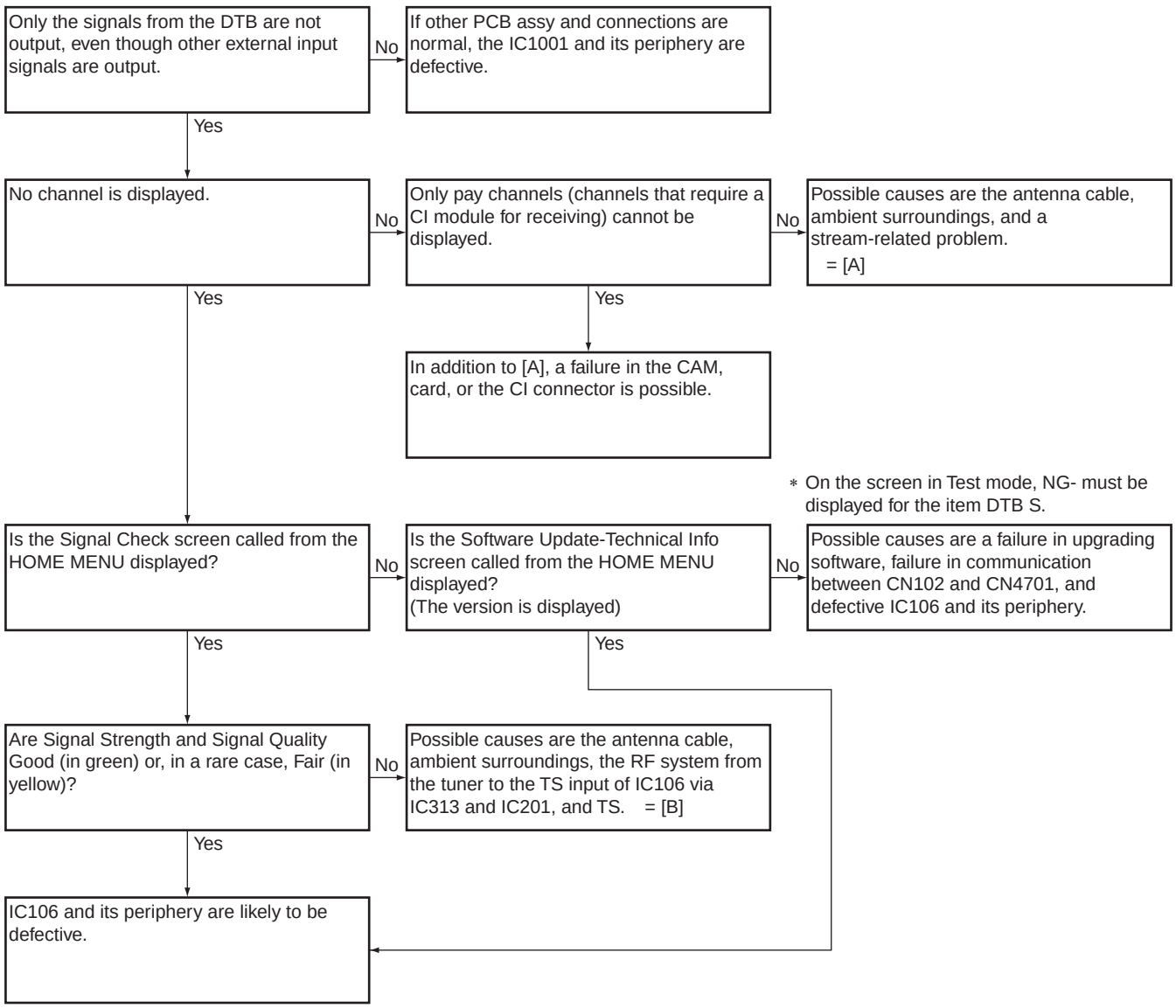

AA
The monitor owned by the user may not be compatible with this unit.
Is a correct picture displayed when the monitor owned by the user is connected with this unit using a 5-meter cable made by JAE?
Yes
No
The cable used by the user is in failure.
Is a momentary correct picture and a fully black or a snowy screen alternately displayed? Or, another symptom?
Confirm the manufacturer and model number, and check symptoms in the following steps, then refer to similar case examples that happened in the past. In some cases, upgrading the software/firmware of this unit may resolve the problem.
If there is no measure, ask us for product quality information.
① Does the symptom change when the HDMI cable between the monitor and recorder is disconnected then reconnected?
② With the HDMI cable between the monitor and this unit connected, if the power to the monitor is turned off then back on again, does the symptom change?
③ Turn off the power to both the recorder and monitor. Then, turn on the monitor, then after 30 seconds, turn on the recorder. Does the symptom change?
④ Is the HDMI LED lit, unlit, or flashing?
⑤ What is the picture on the screen like? A fully black, snowy, combination of the both, or other (a fully green or pink screen)?
⑥ Does the symptom change if the length of the cable (made by JAE) is different?
⑦ Are some spots missing by dots (missing pixels) on the screen? If so, there may be problems in the length or quality of the cable or the reception capacity of the monitor. Check if the symptom disappears when a 5-meter or less cable made by JAE is used.

2. In a case when only the HDMI audio is not outputted


Is a DVI device connected (with a DVI device, only the video signal is output, and no sound is output)? Is an HDMI device that does not support the audio signals connected?
No (Checking of the S/PDIF path)
No (Checking of the CLK, DATA, LRCK, and BCK paths)
Set the Dolby Digital output setting in "Audio Output" of the home menu to PCM. Play back the Dolby Digital audio signal of a DVD. Is the audio signal correctly output from the HDMI and coaxial output (S/PDIF)?
Play back a CD. Are the HDMI and analog audio signals correctly output?
HDMI: No
Analog: Yes
HDMI: No
Analog: No
HDMI: No
S/PDIF: No
HDMI: No
S/PDIF: Yes
Measure the signal at R1030 (CLK), R3201 (BCK), R3202 (DATA) and R3203 (LRCK) with an oscilloscope, using a probe, to check if the signal is correct.
Yes
There may be a problem since audio DAC circuit.
There may be a problem with the coaxial output circuit.
Measure the signal at R*** (Note 1) with an oscilloscope, using a probe, to check if the signal is correct.
Yes
(Coaxial output)
No
With the aid of an oscilloscope, check IC1001 and IC5801 for the points listed below.
• R5865 (HTX_CLK)
From the following points, a 3.3V swing signal must be output:
• R5826 to R5828
Note 1 : R5708: AT model
R5701: DT model
No
No
There may be a problem with the EMMA2RFEX.

5.3 DIAGNOSIS OF THE DTVD ASSY

1. The DTB (Digital Terrestrial Block) does not function


Only the signals from the DTB are not output, even though other external input signals are output.
No
If other PCB assy and connections are normal, the IC1001 and its periphery are defective.
Yes
No channel is displayed.
No
Only pay channels (channels that require a CI module for receiving) cannot be displayed.
No
Possible causes are the antenna cable, ambient surroundings, and a stream-related problem.
= [A]
Yes
Yes
In addition to [A], a failure in the CAM, card, or the CI connector is possible.
* On the screen in Test mode, NG- must be displayed for the item DTB S.
Is the Signal Check screen called from the HOME MENU displayed?
No
Is the Software Update-Technical Info screen called from the HOME MENU displayed?
(The version is displayed)
No
Possible causes are a failure in upgrading software, failure in communication between CN102 and CN4701, and defective IC106 and its periphery.
Yes
Yes
Are Signal Strength and Signal Quality Good (in green) or, in a rare case, Fair (in yellow)?
No
Possible causes are the antenna cable, ambient surroundings, the RF system from the tuner to the TS input of IC106 via IC313 and IC201, and TS. = [B]
Yes
IC106 and its periphery are likely to be defective.

- Except when the local regulator is in failure, a power failure (blown a fuse, etc.) makes other input systems abnormal.
- If mosaic images are often displayed, check the items in [B].

6. SERVICE MODE

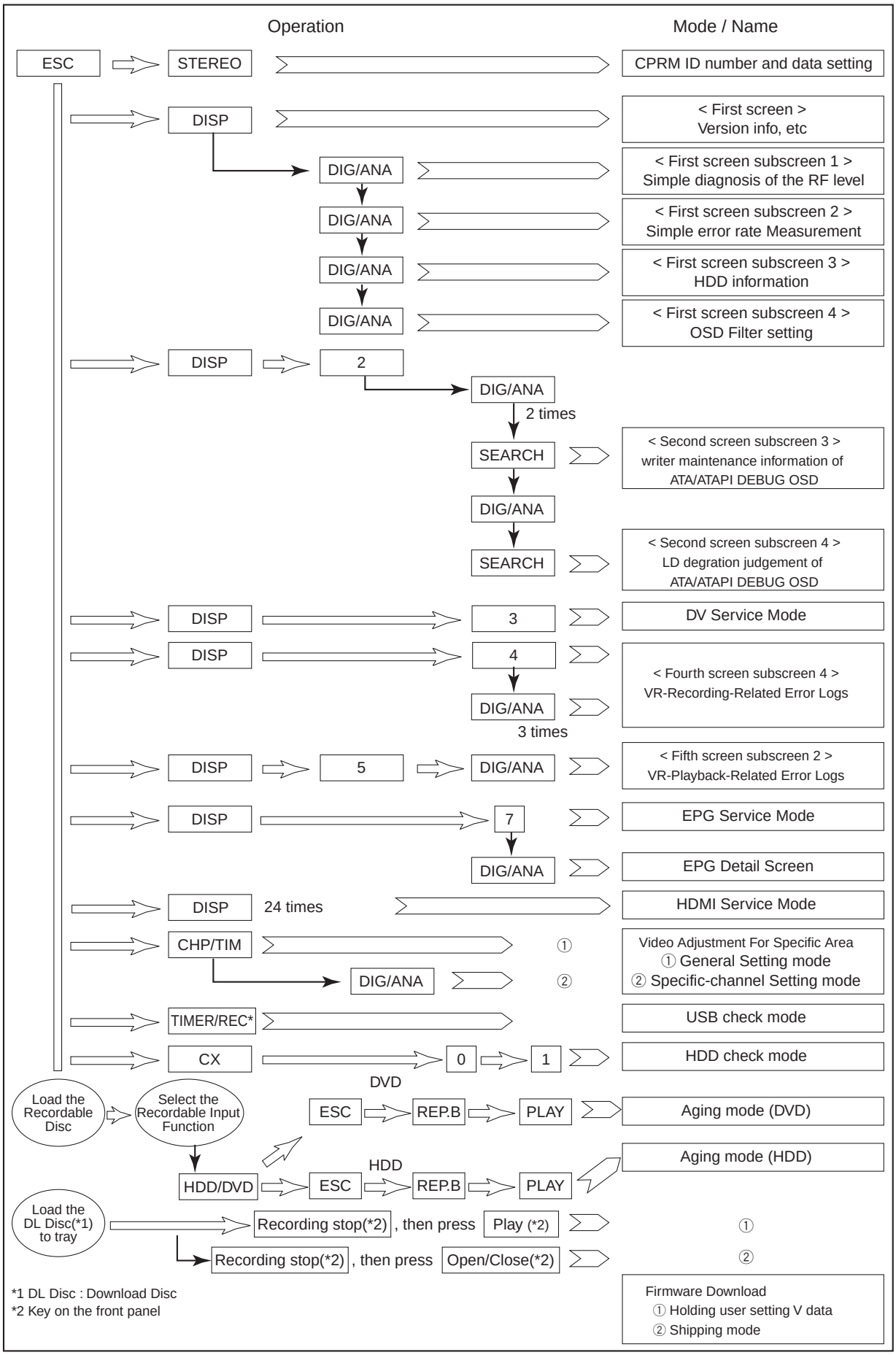
◆ Overview and Purposes

To be used to check the status of the product and to collect the information for failure diagnosis.
The following information to be used for servicing is displayed:
[1] First screen : Version, HDD information, etc.
[2] Second screen : ATA/ATAPI debug screen (Writer information)
[4] Fourth screen : VR-recording-related error logs
[5] Fifth screen : VR-playback-related error logs

Each screen has sublevel screens.

[Note] After entering any Service mode screen, to shift to another Service mode screen, first quit that Service mode screen then enter another Service mode screen.

◆ SERVICE MODE MAP

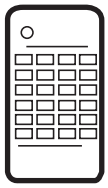


6.1 VERSION INFORMATION, ETC. (FIRST SCREEN)

[Purposes]

To check the versions of the system control computer, TUNER microcomputer, and firmware for the drive, simple measurement of the RF level for the U/V tuner, results of the simple error rate measurement, HDD information, and OSD Filter setting

[Tools to be used]



Remote control unit for servicing (GGF1381)

Aluminum-coated test disc (GGV1025)

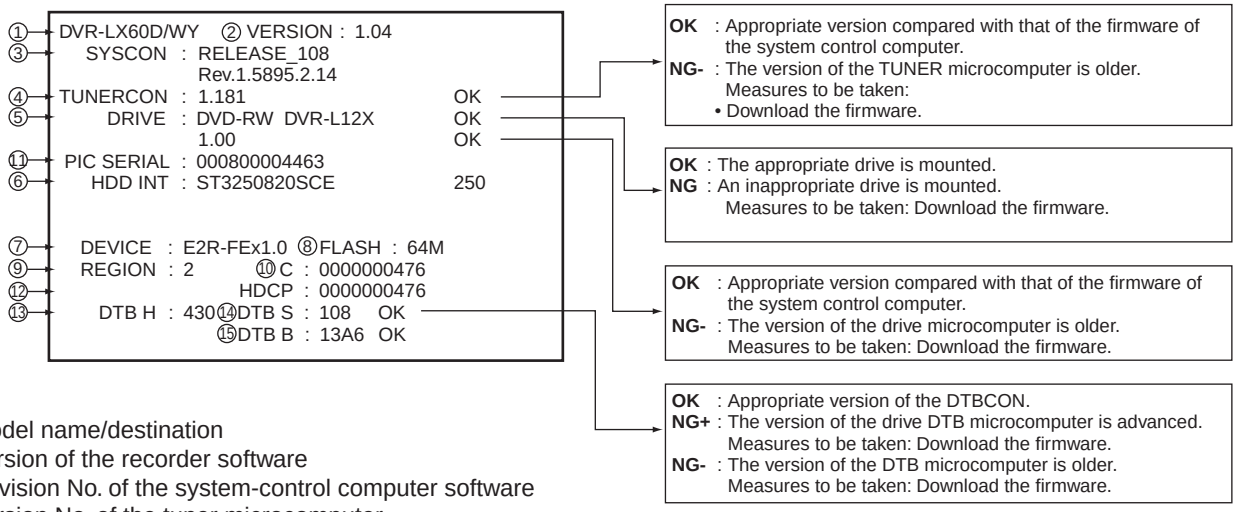
[How to enter] While the GUI screen is not displayed, press the ESC then DISP keys.

How to enter and change subscreens of the first screen: While the first screen is displayed, press the DIG/ANA key repeatedly until your desired subscreen is displayed. The subscreens change cyclically.

[How to quit] Press the ESC key.

[Description]

(1) First screen


① DVR-LX60D/WY ② VERSION : 1.04
③ SYSCON : RELEASE_108
Rev.1.5895.2.14
④ TUNERCON : 1.181 OK
⑤ DRIVE : DVD-RW DVR-L12X OK
1.00 OK
⑪ PIC SERIAL : 000800004463
⑥ HDD INT : ST3250820SCE 250
⑦ DEVICE : E2R-FEx1.0 ⑧FLASH : 64M
⑨ REGION : 2 ⑩C : 0000000476
⑫ HDCP : 0000000476
⑬ DTB H : 430⑭DTB S : 108 OK
⑮DTB B : 13A6 OK
OK : Appropriate version compared with that of the firmware of the system control computer.
NG- : The version of the TUNER microcomputer is older.
Measures to be taken:
• Download the firmware.
OK : The appropriate drive is mounted.
NG : An inappropriate drive is mounted.
Measures to be taken: Download the firmware.
OK : Appropriate version compared with that of the firmware of the system control computer.
NG- : The version of the drive microcomputer is older.
Measures to be taken: Download the firmware.
OK : Appropriate version of the DTBCON.
NG+ : The version of the drive DTB microcomputer is advanced.
Measures to be taken: Download the firmware.
NG- : The version of the DTB microcomputer is older.
Measures to be taken: Download the firmware.

① Model name/destination
② Version of the recorder software
③ Revision No. of the system-control computer software
④ Version No. of the tuner microcomputer
Result of the combination ckeck with system u-com
⑤ Information on the built-in drive
(Model name, version No., model type)
⑥ Data of the built-in HDD, capacity of the HDD
⑦ DEVICE information (EMMA type, ES No.)
⑧ FLASH ROM information
⑨ Region No.
⑩ CPRM information (CPRM key No.)
⑪ PICUP SERIAL No.
⑫ HDCP information (HDMI authentication key)
Same number as that for CPRM.
⑬ DTB hardware information (Version)
07EU : 430
⑭ DTB u-com information (Version)
⑮ DTB software information (Check Sum)

• **Details on HDD data are described below:**

HDD : WDC10234564 # 160

- Capacity of the HDD (unit: Gbytes)
- HDD identification error indication
- Name of manufacturer, part No. by manufacturer

If any abnormality exists in HDD connection, the indications shown in Table 1 below are displayed.

Table 1: HDD recognition status represented by the HDD data display

HDD identification conditions	Example of HDD data to be displayed	Remarks
Failure in physical identification of HDD (no connection, defective HDD, interface error)	Blank space	• Check the connection to the SATA connector. • Replace the SATA flexible cable and connector. • Replace the HDD. • Replace the resistor in the SATA communication line.
Physical identification of HDD possible, but not identified (CPRM ID is not input.)	WDC 10234564 # 160	• Input the CPRM ID.
Physical identification of HDD possible, HDD identified, but failure in logical formatting	WDC 10234564 ! 160	"!" represents an HDD-recognition error. • Initialize the HDD or erase all titles.
Physical identification of HDD possible, HDD identified, and correct logical formatting (HDD correctly identified)	WDC 10234564 160	

If an error indication in the HDD data does not disappear even after the above measures were taken, refer to another sheet of "HDD Service Mode."

◆Simple Diagnosis of the RF Level (Subscreen 1)

[Purposes] To check the RF signal of the U/V tuner by checking the input frequency difference and AGC voltage in this debug mode

[How to enter] While the User Setting display is displayed, press the ESC, DISP, then DIG/ANA keys, in that order.

[How to quit] Press the ESC key.

[Description]

```
DVR-LX60D/WY        VERSION: 1.04
  SYSCON   : RELEASE_108
             Rev.1.5895.2.14
TUNERCON   : 1.181                OK
   DRIVE   : DVD-RW DVR-L12X      OK
             1.00                 OK
PIC SERIAL : 000800004463
  HDD INT  : ST3250820SCE         250


   DEVICE  : E2R-FEx1.0    FLASH : 64M
   REGION  : 2             C : 0000000476


  Input CH : ** ch
  Freq Diff: Low 1
  AGC Volt : **** mV
```

- Input channel
- Input frequency difference
- AGC voltage

Subscreen 1

1) Frequency Difference (Freq Diff)

How much tuning is off is monitored, as shown below:

Input Frequency	Display
Faraway	High 7
High (within 200kHz)	High 1~5
Just Tune	Center
Low (within 200kHz)	Low 1~5
Low (over 200kHz)	Low 7

2) AGC voltage (AGC Volt)

The gain controlled by the tuner is monitored to infer the input electric field intensity.
(The accuracy of inference differs depending on the product.)

	Field Intensity	AGC VOL
Intense field area (Clear image)	70 dBμ or more	3100 mV or less
Less intense field area (Noise may be generated.)	50 dBμ or more 70 dBμ or less	3100 - 4400mV
Weak field area (Much noise. EPG/VPS/PDC sometimes cannot be obtained.)	30 dBμ or more 50 dBμ or less	4400 mV or more (It is unable to discriminate under the weak field area.)
Very weak field area (Image damaged. EPG/VPS/PDC cannot be obtained.)	30 dBμ or less	4400 mV or more (It is unable to discriminate.)

Tips:

For good reception, the field intensity must be 50 dBμ or more (AGC Volt 4400 mV or less).
For accurate measurement, use a field intensity meter.

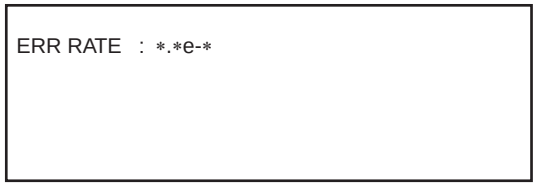
◆Simple Error Rate Measurement (Subscreen 2)

[How to enter]
- While the User Operation screen is displayed, press the ESC then DISP keys, then the DIG/ANA key twice, in that order.
- While subscreen 1 of the first screen is displayed, press the DIG/ANA key.

[How to quit] Press the ESC key.

[Measurement procedures]

① Display subscreen 2.
② Load the Test disc (GGV1025).
③ Judge the results of the error rate measurement by referring to Table 1.



Subscreen 2

[Tips]

During VR mode playback, the average value of the past 10 VOBUs is displayed. During DVD-Video or Video mode playback, the average value of the past 256 sectors is displayed.
During VR mode playback, the speed ratio of the drive (/: normal, no indication: double speed) is also displayed.

Table 1: Thresholds when determining OK or Error

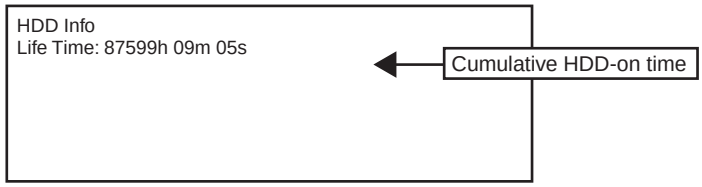
Disc type	Recording mode	Finalized or not finalized	Reference value
DVD-VIDEO	–	–	8.0×10^{-4}
DVD-R	Video mode	Finalized	1.0×10^{-3}
		Not finalized	1.0×10^{-3}
DVD-RW	Video mode	Finalized	1.0×10^{-3}
		Not finalized	1.0×10^{-3}

◆HDD Information (Subscreen 3)

[How to enter]
- While the User Operation screen is displayed, press the ESC then DISP keys, then the DIG/ANA key three times, in that order.
- While subscreen 2 of the first screen is displayed, press the DIG/ANA key.

[How to quit] Press the ESC key.

[Mode description]



Subscreen 3

[Tips]

- **How the data on cumulative HDD-on time are processed in memory**

  Storage place:
  FLASH ROM

  Timing of referring to the data on cumulative HDD-on time:
  When the power is turned on, fails, the FLASH ROM is referred to.

  Timing of updating the data on cumulative HDD-on time:
  While the HDD is on, the data on cumulative HDD-on time in the RAM is updated every 3 seconds, and every time updating is executed the data are stored in the Backup SRAM. When the power is turned off, the data are stored in the FLASH ROM.

- **How to clear the data on cumulative HDD-on time**

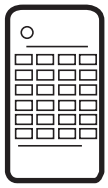
  FLASH ROM:
  When the HDD Identification Setting is performed, the data on cumulative HDD-on time are automatically cleared. The HDD Identification Setting is automatically performed when the CPRM setting is performed on the CPRM setting screen (to display the CPRM setting screen, press the ESC then the STEREO keys).

  Notes:
  - The data on cumulative HDD-on time are not cleared when resetting to factory-preset values is performed.
  - The data on cumulative HDD-on time are not cleared when the system-control computer software is downloaded.

◆ OSD Filter Setting (Subscreen 4)

[Purpose] Depending on the monitor used, the character flicker on the OSD may stand out.
If a system, such as character flicker, appears on the monitor, select the filter response.

[Tools to be used]



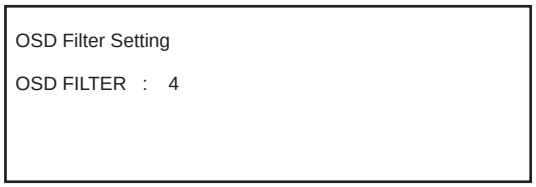
Remote control unit for servicing
(GGF1381)

[How to enter]
- While the User Operation screen is displayed, press the ESC then DISP keys, then the DIG/ANA key four times, in that order.
- While subscreen 3 of the first screen is displayed, press the DIG/ANA key.

[How to quit] Press the ESC key.

[Setting procedures]

① Display subscreen 4.
② Select the setting from the key operation table.



Subscreen 4

[Tips]

As the setting value becomes greater, jitter is reduced on a CRT display. However, as lines for characters appear thick, complex characters may become difficult to read. On the contrary, as the setting value becomes smaller, jitter increases on a CRT display. However, as lines for characters become sharper, complex characters become more legible.

Note: Use the remote control unit for servicing.
Note: A new setting becomes active as soon as it is made. As a new setting is stored in nonvolatile memory, it will be retrieved when the unit it turned on the next time.
Note: After the factory-preset values are downloaded, the setting value for the OSD Filter will be the default value (4).

[(Table 2) Key operation of OSD Filter setting]

Key	Operation	Setting value	Remarks
[Rev x 3], [SPEED+] [x 3 Fwd], [SPEED-]	Changing the setting value for the OSD Filter	0 - 4 (Default value: 4)	[Rev x 3], [SPEED+] : The setting value increases by 1. [x 3 Fwd], [SPEED-] : The setting value decreases by 1.
[CLEAR]	The setting value is reset to default.	–	
[ESC]	To exit the OSD Filter Setting and clear the screen (Appears the tuner screen.)	–	–

6.2 ATA/ATAPI DEBUG SCREEN (SECOND SCREEN)

[Purposes]

To be used as a rough guide to judge whether the pickup unit is all right or not

- Dirt on the pickup lens
- Degradation of the laser diodes for reading CDs and reading/writing to/from DVDs

[Tools to be used]

Remote control unit for servicing (GGF1381)

Aluminum-coated test disc (GGV1025)

[How to enter]

- While the User Operation display is displayed, press the ESC, DISP, then 2 keys, in that order.
- While any subscreen of the second screen is displayed, press the DIG/ANA key repeatedly. The subscreens change cyclically.

[How to quit] Press the ESC key.

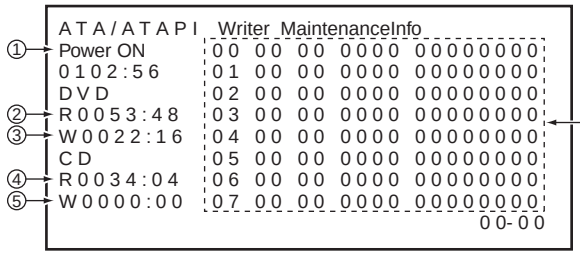
◆Writer Maintenance Information of ATA/ATAPI DEBUG OSD (Subscreen 3)

[How to enter]

- While the User Operation screen is displayed, press the ESC, DISP then 2 keys, then the DIG/ANA key twice, in that order.

[How to quit] Press the ESC key.

[Procedures] Update the display by pressing the SEARCH key while subscreen 3 is displayed.



Error log for the Writer (Not for Service)

① Power-on time/cumulative power-on time
② Duration of emission of the laser diode (LD) for DVD-R/DVD while reading
③ Duration of emission of the LD for DVD-W/DVD while writing
④ Duration of emission of the LD for CD-R/CD while reading
⑤ Duration of emission of the LD for CD-W/CD while writing (This function is not used for this model.)

② If the total hours of duration of emission of the laser diode (LD) for DVDs while reading ② and that of emission of the LD for DVDs while writing ③ exceed 4,700 hours, the LDs may be degraded. Perform an LD degradation judgment, using subscreen 4.

[Tips]

MTTF hours for each LD
DVD: 4,700 hours
CD: 11,000 hours
The ATA/ATAPI Writer Maintenance Info is obtained each time the power is turned on. Thereafter, the data on the subscreen is updated each time the SEARCH key is pressed (the updating command is sent) while this subscreen is displayed. Care must be taken when updating this subscreen, because an undesired command is inserted if it is executed while recording, etc.
[Note on lighting time data for each LD]
Since data on lighting time of each laser diode (LD) are stored in the flash ROM on the MAIN Assy, after the MAIN Assy is replaced, the data will be cleared. However, after the LOADER Assy is replaced, data on lighting time of each LD will be retained in the MAIN Assy. Therefore, before either the MAIN Assy or LOADER Assy is to be replaced, it is recommended that you write down the lighting time data.

◆LD Degration Judgment of ATA/ATAPI DEBUG OSD (Subscreen 4)

[How to enter] • While the User Operation screen is displayed, press the ESC, DISP then 2 keys, then the DIG/ANA key three times, in that order.

[How to quit] Press the ESC key.

[Notes]
- For correct measurement of items ① to ④ indicated in the display below, leave the unit at room temperature (25˚C) for a while before turning it on, and do not load a disc.
- For RF measurement (item ⑤), it is recommended to use the Test disc (GGV1025). As the RF level differs depending on the characteristics of the pickup from product to product, it cannot be used for judging degradation of the LD. Use the RF level as a rough guide to know the difference between before and after lens cleaning.

[Procedures] To update the value for each item, press the SEARCH key while subscreen 4 is displayed. For details on each item and the conditions of updating the values, see Table 2 below.

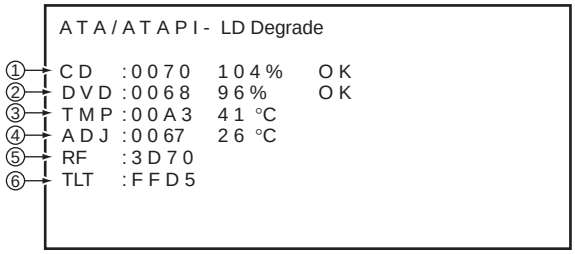


Table 2: Description of each item and conditions for updating data

No.	Item	Description	Conditions for updating by pressing the SEARCH key
①	CD	Degradation judgment of LD for CD. Regarded as NG when the value is 120% or higher (same standard as for the PC drive)	No disc inserted in the disc tray
②	DVD	Degradation judgment of LD for DVD. Regarded as NG when the value is 120% or higher (same standard as for the PC drive)	No disc inserted in the disc tray
③	TMP	Current temperature inside the Writer	No disc inserted in the disc tray
④	ADJ	Temperature (approx. 25°C) inside the Writer during adjustment	No disc inserted in the disc tray
⑤	RF	RF level (16-bit data, proportional calculation performed using the actual RF level value with 2.5 V = 0xFFFF as the maximum value, displayed in 4-digit hexadecimal)	During playback of disc medium (GGV1025)
⑥	TLT	Writer adjustment data for straight (non-HDD) model (FFFF is diplayed when the writer is not adjusted.)	No condition

If the results of degradation of the LDs for CDs or DVDs are NG, replace the drive.

6.3 VR-RECORDING-RELATED ERROR LOGS (FOURTH SCREEN)

[Purposes]

To roughly determine in which category shown below a symptom that is difficult to reproduce belongs.
For details on the categories of error logs displayed, see "Table 1: Description of VR-recording-related errors."

- Errors related to the MPEG Encoder
- Errors related to the drive system
- Errors related to copying
- Errors related to others
- Errors related to the HDD

[Tool to be used]

Remote control unit for servicing
(GGF1381)

[How to enter]

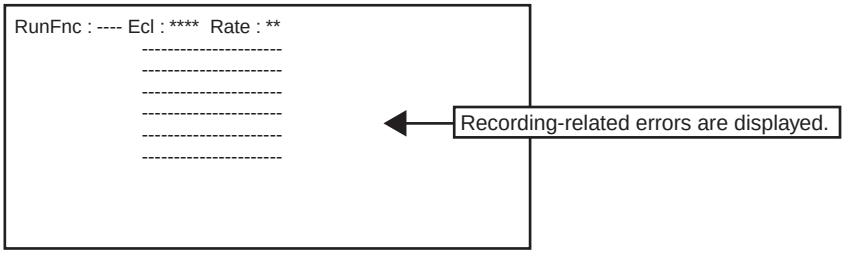
- While the User Operation display is displayed, press the ESC, DISP, then 4 keys, in that order.
- While any subscreen of the fourth screen is displayed, press the DIG/ANA key repeatedly.
  The subscreens change cyclically.

[How to quit] Press the ESC key.

[Description of each subscreen]

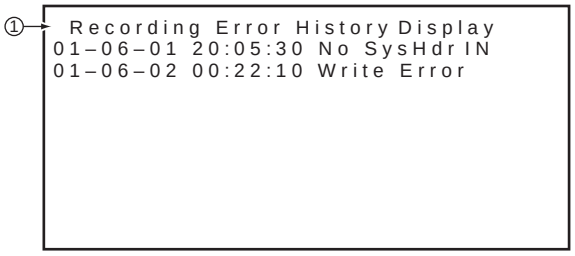
(1) VR-Recording-Related Error Logs (Subscreen 1)

- Errors related to recording are displayed on the lines "Rec Err:," as shown below.
  For details on errors, see "Table 1: Description of VR-recording-related errors."



(2) Subscreen 2 and 3 (These subscreens are not for service use.)

(3) VR-Recording-Related Error Logs (Subscreen 4)



① There are two error-log screens, on which up to 9 logs per screen are displayed.
(generation time [year-month-day, hour:minute:second], error data in simplified description)

[Tips]

- The two error-log screens can be switched by pressing the SPEED+ or SPEED- key.
- For details on error messages, see Table 1 "Description of VR-recording-related errors".

(4) Subscreen 5 to 12 (These subscreens are not for service use.)

◆Description of VR-Recording-Related Errors

Any error message marked with * is displayed "RecErr : ---------" on the Subscreen 1 of the fourth screen.

● Error Related to MPEG Encoder

Error Message	Description
AVEnc Hang	AVEncoder failed
IN Encode *	Changes cannot be made in the process of encoding
No SysHdr IN	System packet is not input periodically
Stm Start NG	Failure to start encoding (reasons not clear)
Stream NG	Inappropriate input stream data
Strm Start NG	Timeout waiting for system packet input at the beginning

● Error Related to Drive System

In a case of an error in the drive system, scratches or dirt on a disc, or a problem of the drive itself (dirty pickup) may be suspected.

Error Message	Description
Bdr Cls NG	Close Border failed
Bdr Opn NG	Open Border failed
BUF Overflow	Overflow of the Stream Buffer
CLS Rzon Fail	Video Mode Close Rzone failure
Drive Hang	The Drive is hung up.
Drv Err	General error of the drive
Drv Hard Err	Abnormality in the drive hardware or firmware
Drv TimeOut	Timeout waiting for drive operation
Fail Repair	Repair failed
Format NG	Format failed
May Be V mode	Although TMP_VMGI is not written, it may be Video Mode disc.
Mech No Res	No response from the mechanical-control computer
MKB Invalid	MKB reading error
NWA Exhaust	NWA surpassed and impossible to use
OPC NG	OPC failed
PCA Full	PCA has been used up.
Read Err	Reading failed, ECC failed, etc.
ReadOnly DISC *	Because some data are invalid, data cannot be written
RMA Full	RMA has been used up.
Rzn Cls NG	Close RZone failed
Rzn Rpr NG	Repair RZone failed
Rzn Rsv NG	Reserve RZone failed
TMP-VMG WrErr	Video Mode TMP VMGI Write Error
VTSI_B Wr Err	Video Mode VTSI BUP Write Error
VTSI_B2 Wr Err	Video Mode VTSI BUP Write Error (After Layer Change)
VTSI Wr Err	Video Mode VTSI Write Error
VTSI2 Wr Err	Video Mode VTSI Write Error (After Layer Change)
Write Err	The Drive failed to write and could not be recovered.
May Be PVR	May be +VR disc, but no RSAT
V Final fail	Abnormal process occurred when finalizing Video mode
DLVR trace NG	Close Rzone failed at dual layer disc

RSAT : Reserved Space Allocation Table

● Error Related to Dubbing

Error Message	Description
H2D CP SomeNG	Other NG HDD →DVD copy
Mem get NG	Video Mode Copy Memory has not ensured.
Strm TransfNG	Video Mode Copy Stream Transfer NG
Tracon Trn NG	Video Mode Copy Tracon transfer has not been completed.
VC Cell Max	Maximum number for Video Mode copy Cells exceeded
VC CopyCancel	Video Mode Copy Copy Cancel
VC FlushC NG	Video Mode Copy Flush Cache NG
VC HDD C Err	Obtaining Video Mode Copy HDD Cell information failed
VC HDD Inf NG	No information on Video Mode Copy HDD
VC HDD Info NG	Format failed
VC Idling NG	Video Mode Copy idling NG
VC Pck Anl NG	Analizing Video Mode Copy Pack failed

● Error Related to Dubbing (Continued)

Error Message	Description
VC Transf Stp	Video Mode Copy Transfer Stop
VC TSO BLK NG	Video Mode Copy TSO Block transfer has not been completed.
VC VOBU SizeE	Video Mode Copy VOBU Size NG
V Rsv RzoneNG	Video Mode Copy Reserve Rzone failed
V2H APP FL NG	VR → HDD APP FLG is OFF
V2H Aud Ch NG	VR →HDD Audio Channel NG
V2H Aud Md NG	VR →HDD Audio Mode NG
V2H Aud Stm N	VR →HDD Audio Stream number NG
V2H SRC Prot	VR →HDD copy prohibited material
V2H Unknown	VR →HDD other NG
V2H VOBU TMNG	VR →HDD Play back time of each VOBU is different
V2H V Reso NG	VR →HDD Video resolution NG
H2D CP NoSpac	HDD →DVD insufficient free space for copy
H2D TO HDDRD	HDD →DVD (VR) TimeOut at HDD playing side
H2D TO SPRO	HDD →DVD (VR) TimeOut at internal processing
H2D TO DVDWR	HDD →DVD (VR) TimeOut at HDD recording side

● Other Errors

Error Message	Description
Abort *	Cancellation
Already open	Extension file is already opened.
BK BATT Down	Backup RAM data has been erased.
BK FSYS Dirty	Backup RAM data has not been written on the File Sys.
BUG	Some bugs
BusReset Done	Bus Reset has been executed.
Cell Close NG	Cell Close NG
CPRM IC NG	Inappropriate CPRM IC
Dir Depth Err	Tree of Directory is too deep.
Disc Full	No further data can be written because the disc is full.
DRAM CLR Err	Video Mode DRAM (Stream Buffer) Clear failure
DRAM NG	Abnormality in access to the Work DRAM
Drive Destroy	The drive has crashed.
EncModul Hang	Encoder routine is hung up.
F Alrdy Exst	Extension file is already exist.
File cancel	Extension file is canceled.
FileNot Exist	Extension file is not exist.
Format Excec	Formatting has been executed.
Invalid Disc *	The disc cannot be recognized.
Invalid Param *	Invalid parameter
Invalid TMVMG	Invalid TMP_VMGI content
Invalid UDF *	Invalid UDF content
Invalid VMG *	Invalid VMG content
Invalid VTSI	VTSI information of +VR is unusual.
Irr Action *	Incorrect action
MKB REVOKED	Error in gaining data
Limit Over *	Standard maximum limit exceeded
No More Info *	No more space in the internal work-management area
No Permission *	No permission to write to the disc
No Video	No video input (not locked)
Now Busy *	In the process of the emergency processing
NV Pck DMA Er	Inappropriate NaviPack DMA
NV Pck MK Err	Error in creating NaviPack
Ourob Strm NG	Inappropriate stream data to the Ouroboros input
Over Heat	Abnormal temperatute
PARAM NO ACCP	Recording parameter is not matched.
Process Over	Process is overfull.
Protect Src *	Source to be recorded is copy-protected.
Rec Pause *	No operation permitted during recording pause
Relocation Do	VR-recording data was relocated

● Other Errors (continued)

Error Message	Description
Repair Excec	Repairing has been executed.
Something *	Undetermined error
SRAM NG	Abnormality in access to the backup work SRAM
Status NG *	Abnormality in change of statuses
SW PVR	Switch to +VR playback process
SW Vpb mode *	Switching to video playback routine is required.
SW Vrec mode *	Switching to video recording routine is required.
Unmatch Stamp *	Impossible to modify because of nonmatching time stamp
VBR-SRAM NG	Abnormality in VBR SRAM
V Categ ID NG	Inappropriate Category ID
V Cate Inf NG	Inappropriate Category information
V Ext MAX Ovr	Count Max exceeded
V ExtToo Big	The extension file is too large.
V Ext TY NG	Type NG
Virgin DISC	Virgin Disc
VOBU Info NG	Inappropriate VOBU information
WaterMark Det	Watermark detected
WM Cracked	WM Cracked
Param Short	Editing Error (Clear A-B)
Invalid VRMI	Information of +VR is NG. (VRMI)

● Error Related to HDD

Error Message	Description
Do nothing	Do nothing for demand.
ESFSYS CORUPT	easyfsys error
ESFSYS INIT	easyfsys initializing
HDD Buff High	High-level process executed for the HDD Buffer
HDD DEF DONE	HDD deflag finished
HDD DEF ERR	HDD deflag error
HDD Destroy	HDD is not recognized on the bus.
HDD INFO BAD	Incorrect HDD Management Data
HDD Initialize	HDD initialized
HDD IRRG POFF	Abnormal power off
HDD MBR NG	Inconsistent MBR data
HDDReset Done	HDD Reset executed
HDD ROMSUM NG	Rom-code check sum NG
HDD SIG NG	Inconsistent HDD Management Data Magic
HDD SMART NG	Inappropriate HDD SMART
HDD Trans Err	DMA error in HDD copy transfer
HDD unauthor	Inconsistent HDD serial No.
HDD Zero WR	MBR was written
Task No Activ	Task has not been activated.
TT Rec Over	Title recording time full
HDD WRONG TGT	Invalid HDD target No. is directed.
extHDD Ignore	External HDD is dismounted.
HDD PFile NG	Program file installed in HDD is NG.
HDD DEL TT	Delete the title by HDD recovery.
HDD DEL PL	Delete the dubbing list by HDD recovery.
HDD DEL OC TT	Delete the title moving on the way inside HDD

● No Error

Error Message	Description
Non Err *	Normal

Abbreviations:

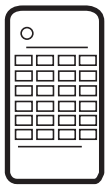
ECC = 4 byte Code for Error Correction
UDF = Universal Disc Format
PCA = Power Calibration Area
OPC = Optical Power Control
NWA = Next Writable Address
VMG = Video Manager
RMA = Recording Management Area
MKB = Media Key Block
TMP_VMGI = Temporary Video Manager Information
Border = from Lead-in to Lead-out

6.4 VR-PLAYBACK-RELATED ERROR LOGS (FIFTH SCREEN)

[Purposes]

It can be inferred that an operation that caused an error in the drive was performed or that a failure occurred in the drive if any of the error logs shown in "Table 2: Description of VR-playback-related errors" is recorded on this screen.

[Tool to be used]



Remote control unit for servicing
(GGF1381)

[How to enter]

- While the User Operation display is displayed, press the ESC, DISP, then 5 keys, in that order.
- While any subscreen of the fifth screen is displayed, press the DIG/ANA key repeatedly.
  The subscreens change cyclically.

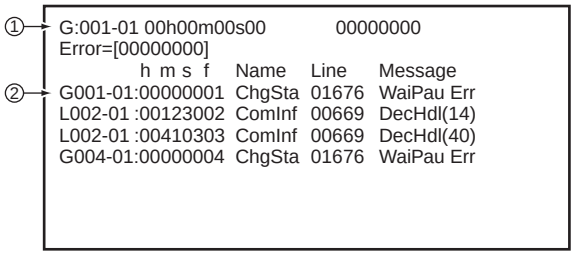
[How to quit] Press the ESC key.

[Description of each subscreen]

(1) Subscreen 1 (This subscreen is not for service use.)

(2) VR-Playback Error Logs (Subscreen 2)

- For details on error messages, see Table 2 "Description of VR-playback-related errors".
- If a VR-playback-related error is generated, a problem in data reading from the disc may be suspected.
  (The possibility of a problem on the drive side is high.)



① Information on display position
Original / Play list (G/L), Title No., Chapter No. [X:XXX-XX]
Display time (hour, minute, second & frame) [XXhXXmXXsXX]
Logic address for playback (ID) [XXXXXXXX]
Number of entries to error log [XXXXXXXX]

② Error message log
Original / Play list (G/L), Title No., Time of occurrence (min & sec) [XXX:XXXX]
Location of occurrence (this data is used for development), Name: Name of module where the error occurred, Line: Number of line where error occurred
Playback-system errors that occurred in 13 times of playback in past [XXX:XXXXXXX]
* For details of error information, refer to the Appendix Table 1.
* If information on errors which occurred on days earlier than the current day is contained on the screen, the information that follows the information which are displayed with "^" between “Time of occurrence”, “Name”, “Line” and “Message” indicates the errors that occurred on the current day.

◆ Description of VR-Playback-Related Errors

Error Message	Details of error
AudioPB Err	Audio initialization error
WaiPau Err	Pause was disabled though tried. (Pause-wait timeout)
CC_OS_ERR	CC output processing error
Tr:NullBlk	No valid data in the first block
Tr:NaviErr	Navigation pack error
Tr:ReadErr	Data read error
Dec:PicDisp	Not played up to final PTS
Dec:Size	horizontal/vertical_size in sequence header is 0 or above 720 × 576.
Dec:PicTyp	picture_coding_type in picture header is neither of the I, P, nor B picture type.
Dec:Struct	picture_structure in picture coding extension is neither top/bottom_field or frame picture.
Dec:Syntax	Header size is insufficient or does not match with markerbit.
Dec:NoHead	No picture header exists between picture data.
Dec:SqErr	Detected sequence_error_code.
Dec:Refrenc	In Field structure, top_field and bottom_field of temporal_reference in picture header does not match.
Dec:Profile	profile_and_level_indication in sequence extension header is exceeding MP@ML.
DecHdl(**)	Decoder command execution timeout. (**) is replaced by No. of command which was to be executed. The Nos. and names of commands are as follows. /* DECODER system command */ 0 HANDLER_DECODER_INIT, 1 HANDLER_DECODER_INIT_STARTUP, 2 HANDLER_DECODER_INIT_PLAY, 3 HANDLER_DECODER_INIT_RTR_PLAY, 4 HANDLER_DECODER_INIT_AUDIO, 5 HANDLER_DECODER_EXIT, 6 HANDLER_DECODER_BLACK_BACK, 7 HANDLER_DECODER_SET_DISP_FMT, 8 HANDLER_DECODER_SET_ASPECT_MODE, 9 HANDLER_DECODER_DISP_BITRATE, /* DVD command */ 10 HANDLER_DEC_DVD_VIDEO_PLAY, 11 HANDLER_DEC_DVD_VIDEO_PLAY_LIST, 12 HANDLER_DEC_DVD_AUDIO_PLAY, 13 HANDLER_DEC_DVD_STOP, 14 HANDLER_DEC_DVD_PAUSE, 15 HANDLER_DEC_DVD_PAUSE_STILL_MODE, 16 HANDLER_DEC_DVD_STEP, 17 HANDLER_DEC_DVD_REWSTEP, 18 HANDLER_DEC_DVD_PAUSE_OFF, 19 HANDLER_DEC_DVD_FF, 20 HANDLER_DEC_DVD_REW, 21 HANDLER_DEC_DVD_SLOW, 22 HANDLER_DEC_DVD_REWSLOW, 23 HANDLER_DEC_DVD_SCAN_OFF, 24 HANDLER_DEC_DVD_SLOW_OFF, 25 HANDLER_DEC_DVD_REWSLOW_OFF, 26 HANDLER_DEC_DVD_REWSKIP_TO_REWSLOW, 27 HANDLER_DEC_DVD_REWPAUSE, 28 HANDLER_DEC_DVD_PLAY_LIST_END_CHECK, 29 HANDLER_DEC_DVD_SET_CAPTION_SW_OFF, 30 HANDLER_DEC_DVD_SET_CAPTION_SW_ON, 31 HANDLER_DEC_DVD_REWPAUSE_TO_REWSLOW,

Error Message	Details of error
	32 HANDLER_DEC_DVD_REGIST_TRICK_CALLBACK, 33 HANDLER_DEC_DVD_TRICK_DATA_END, 34 HANDLER_DEC_DVD_AUDIO_STOP, /* management information */ 35 HANDLER_DEC_INIT_NV_PCK, 36 HANDLER_DEC_INIT_RDI_PCK, 37 HANDLER_DEC_READ_NV_PCK_POINT, 38 HANDLER_DEC_READ_RDI_PCK_POINT, 39 HANDLER_DEC_READ_STC, 40 HANDLER_DEC_READ_PTS, 41 HANDLER_DEC_HLI_ENABLE, 42 HANDLER_DEC_COMMAND_PLAY, 43 HANDLER_DEC_COMMAND_PAUSE, 44 HANDLER_DEC_COMMAND_RSLOW_VOBU_STOP, 45 HANDLER_DEC_INIT_VIDEO_MODE, 46 HANDLER_DEC_SET_VIDEO_MODE, 47 HANDLER_DEC_CHECK_VIDEO_OUTPUT, 48 HANDLER_DEC_CHECK_VIDEO_ERROR, 49 HANDLER_DEC_DISPLAY_SUBPICTURE, 50 HANDLER_DEC_SET_SUBPICTURE_PALLET, 51 HANDLER_DEC_IPB_REVERSE, 52 HANDLER_DEC_SET_AUDIO_SYNC, 53 HANDLER_DEC_COMPULSION_OUTPUT_SUBPICTURE, 54 HANDLER_DEC_CLEAR_LAST_NV_PCK_POINT, 55 HANDLER_DEC_CLEAR_LAST_RDI_PCK_POINT, 56 HANDLER_DEC_GET_PICTURE_PARAM, 57 HANDLER_DEC_CHECK_BUFFER_EMPTY, 58 HANDLER_DEC_CHECK_TRICK_END, 59 HANDLER_DEC_READ_VCD_PTS, /* still picture */ 60 HANDLER_DEC_DVD_STILL_NOTIFY, 61 HANDLER_DEC_DVD_STILL_PLAY, 62 HANDLER_DEC_DVD_STILL_FF, 63 HANDLER_DEC_DVD_STILL_FF_OFF, 64 HANDLER_DEC_DVD_STILL_SLOW, 65 HANDLER_DEC_DVD_STILL_SLOW_OFF, 66 HANDLER_DEC_DVD_STILL_PAUSE, 67 HANDLER_DEC_DVD_STILL_PAUSE_OFF, 68 HANDLER_DEC_DVD_STILL_DATA, 69 HANDLER_DEC_DVD_STILL_GET_COUNT, 70 HANDLER_DEC_DVD_RDI_NOTIFY, /* closed caption */ 71 HANDLER_DEC_CAPTION_NOTIFY, 72 HANDLER_DEC_CAPTION_BUFFER_RESET, 73 HANDLER_DEC_CAPTION_SET_INPUT_USER_DATA, 74 HANDLER_DEC_CAPTION_SET_INPUT_FRAME_DATA, 75 HANDLER_DEC_CAPTION_SEND_FRAME_DATA, 76 HANDLER_DEC_FRAME_CHANGE_NOTIFY

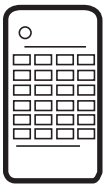
6.5 DV SERVICE MODE

◆DV Debug

[Purpose]

To check whether communication between a DV device and the unit is normal when a DV device is connected

[Tools to be used]



Remote control unit for servicing (GGF1381)

- DV device
- DV cable

[How to enter] Press the ESC , DISP then 3 keys, in that order.

[How to quit] Press the ESC key.

[Mode description]

① **(DV/1394) Init:**OK **AV**:02 **DV**:01

② [**Recorder**] **GUID:**00E0360006100001 IRM
③ **iPCR**:C03F0000
④ [**DV**] **GUID:**0080880303480E96
⑤ **VN:**VICTOR **MN:**GR-D50K
⑥ **TM:**C3 **TS:**75 **CT:**32 **WP:**01 **PS:**FF **OS**:00
⑦ **CA:**A000002020 **MD:**VTR
⑧ [**DVdecode:**Yes] **LineSys:**525-60
⑨ **TC:**00h20m35s **RD:**02/02/05 **RT:**10h34m50s
⑩ **ASPECT:**4:3 **CGMS:**000000 **APSTB:**00 **DEC:**525-60
⑪ **SF:**32KHz **QU:**12bit **AMODE:**4) Stereo

Boldface alphanumerics : Fixed indications
Nonboldface alphanumerics : Variable indications

No.	Item	Description	Remarks
①	Init	Whether the initialization of 1394 LINK and DV decoder inside EMMA2RFEX has been completed (OK) or not (NG)	
	AV	Number of AV devices recognizing connection	Identification number of AV devices including D-VHS, Digital Tuner, etc other than DV devices.
	DV	Number of DV devices recognizing connection	If the number does not become 01 even if a DV device is connected, identification of that device fails.
②	GUID	GUID set in ConfigROM of the unit	GUID : Global Unique ID (Specific ID for DV devices) If the unit is ROOT (IRM), IRM is displayed at the side position of GUID display.

No.	Item	Description	Remarks
③	iPCR	iPCR value of the unit	
④	GUID	GUID set in ConfigROM of the connected DV device	Data are displayed only if one DV device is identified. If the connected DV device is ROOT (IRM), IRM is displayed at the side position of GUID display.
⑤	VN	Vendor name set in ConfigROM of the connected DV device	Data are displayed only if one DV device is identified. (Depending on the device, the vendor name may not be set in ConfigROM.)
	MN	Model name set in ConfigROM of the connected DV device	Data are displayed only if one DV device is identified. (Depending on the device, the model name may not be set in ConfigROM.)
⑥	TM	Transport Mode data obtained from the DV device	Data are displayed only if one DV device is identified.
	TS	Transport State data obtained from the DV device	
	CT	Cassette Type data obtained from the DV device	
	WP	Write-protection data obtained from the DV device	
	PS	Power-state data obtained from the DV device	
	OS	Output signal mode data obtained from the DV device	
⑦	CA	Connect AV data obtained from the DV device	Data are displayed only if one DV device is identified.
	MD	DV device mode	Camera or VTR is displayed only if one DV device is identified.
⑧	[DVdecode:XXX]	Whether Yes (in the process of requesting DV input) or No is indicated in XXX	Normally, Yes is indicated only when CH is set to DV.
	LineSys	Input Line System setting	
⑨	TC	Time-code data of the DVdecode Stream, or response data of the Time Code command	Stream time-code data are obtained when the tape is played in forward direction. Otherwise, time-code data are obtained through an AV/C command.
	RD	Rec Date of DVdecode Stream	
	RT	Rec Time of DVdecode Stream	
⑩	ASPECT	Aspect Ratio of DVdecode Stream	
	CGMS	CGMS of DVdecode Stream (from left to right, CGMS data of bits 5-4: Audio ch 2, bits 3-2: Audio ch 1, and bits 1-0: Video)	*CGMS (Copy Generation Management System): The two-digit codes added to broadcast programs represent the following: 00: Copy freely, 10: Once copy, 11: Never copy
	APSTB	APS trigger bit of DVdecode stream	
	DEC	With/without DVdecode stream input	With input: Signal type (525-60, 625-50, 1125-60, 1250-50, or Invalid) is indicated, Without input: "No" is indicated.
⑪	SF	Sampling Frequency of DVdecode Stream	If SF is 44 kHz, it is considered that 44.1-kHz audio is input, and sound is muted on the unit.
	QU	QUANTIZATION of DVdecode Stream	
	AMODE	AUDIO MODE of DVdecode Stream	

Symptoms		Location in the Debug Screen	Items to be Checked, and Conditions	Possible causes
No operation for DV input	1	DV ①	Check the Init indication: OK: Initialization of 1394 LINK and DV decoder inside EMMA2RFEX appropriately completed. NG: Initialization of 1394 LINK and DV decoder inside EMMA2RFEX has not been completed properly.	Defective IC1001(EMMA2RFEX)/ IC5103(1394PHY), improper connection between IC1001 / IC5103, defective soldering, defective power supply, etc.
	2	DV ①	Check the number of DV devices when one DV device is connected to the recorder: 01 : The connected DV device is correctly identified. Other than 01 : The connected DV device is not correctly identified.	Defective DV terminals, improper connection of the DV-terminal board, defective IC5103(1394PHY), defective cables, an IEEE 1394 device other than the DV device connected.
No picture nor sound for DV input	1	DV ⑧	Check of DV decoding when the recorder channel is set to DV: Yes: The recorder is in the process of a DV input operation No: The recorder is not executing a DV input operation	Defective IC1001(EMMA2RFEX), defective soldering, defective power supply, etc.
	2	DV ⑩	Check DEC: 525-60: An NTSC DV signal is input from the DV device. 625-50: A PAL DV signal is input from the DV device. No: No DV signal is input from the DV device.	Defective DV terminals, improper connection of the DV-terminal board, defective source device defective IC1001(EMMA2RFEX), IC5103(1394PHY) **Note:** As to a model having the Input Line System setting, if the setting and the actual input signal system do not match, no picture appears.
DV input recording impossible	1	DV ⑩	Check CGMS:	Recording cannot be performed for a copy-protected source.
No sound for DV input	1	DV ⑪	Check SF: 32 khz: An audio signal with 32-kHz sampling frequency is being input. 48 khz: An audio signal with 48-kHz sampling frequency is being input. 44 khz: An audio signal with 44.1-kHz sampling frequency is being input.	An audio signal with 44.1-kHz sampling frequency is muted.

6.6 EPG SERVICE MODE

[Purposes]

Reasons for the following malfunctions can be inferred by checking the conditions for obtaining the past EPG data:

① EPG data cannot be obtained.
② Some EPG data obtained are missing.

[Tool to be used]

Remote control unit for servicing
(GGF1381)

[How to enter] • Press the ESC, DISP, 7 keys, in that order.

[How to quit] Press the ESC key.

[Description of the mode]

1. Summary screen

```
    0         1         2         3         4
    01234567890123456789012345678901234567890123456789
00  (EPG EURO)
01  Next Data  Download Time : 14:00
02             Duration     : 01h30m
03  Gemster Data  Fail Count : 00
04
05
06
07  EPG Data Receive Err Summary
08  Date  Start  End  MD  CH  RcvPkt  TotalErr
09  03/31 13:00 13:30 DL  03  001853  000000
10  03/31 09:00 11:00 DL  03  001192  000000
11  03/31 08:00 08:05 HS  --  000645  000000
12  03/31 00:00 00:00           000000  000000
13  03/31 00:00 00:00           000000  000000
14  03/31 00:00 00:00           000000  000000
```

Lines 01-02	The next download starting time for the EPG data is displayed. Next Data Download Time: Starting time Duration: Duration required for acquiring the EPG data
Lines 03	The Gemster EPG data cannot be found. Number times of Host Scan and Schedule Download, DT models only (Always 00 except DT model)
Lines 09-14	The 6 latest error logs when EPG data were received are displayed, with the latest one at the top.

Date	: Month/day when reception started
Start	: Time when reception started
End	: Time when reception ended
MD	: Method for acquiring the EPG data (HS: Host scanning process, DL: Downloading process of the EPG data)
CH	: Data-receiving channel
RcvPkt	: Total number of received packages. A number 999,999 or greater is displayed as "999999."
Total Err	: Total errors during reception. The sum of Hamming Err, Trans Err and InvLine Err numbers indicated on the Detail screen. A number 999,999 or greater is displayed as "999999."

[Tips] In a case where only "HS" is displayed in the MD column of the logs, the host channel has not been found. It is necessary to check the country and postal-code settings in the user settings.

2. Detail screen

[How to enter] Press the DIG/ANA key while the Summary screen is displayed. Up to 6 detail screens (1 to 6) are displayed, one each time the DIG/ANA key is pressed. Each detail screen 1 to 6 corresponds with the EPG reception error logs from the top on the Summary screen.

[How to quit] Press the ESC key.

[Description of the Detail screens]

```
    0         1         2         3         4
    01234567890123456789012345678901234567890123456789
00  (EPG EURO)
01  EPG Data Receive Err Details - 1
02
03  Date : 03/31
04  Start Time : 13:00   END Time  : 13:30
05  Host CH    : 03      P-ON Kind : Download
06
07  Data Receive Info   Total Err  : 000000
08  Pkt Rcv Num : 001853  Pkt Snd Num : 001853
09  Inv Line Err : 000000
10  Slice Cont : Auto   EQ : OFF   LV : -h
11
12  Temporary Buffer Information
13  Pool Num   : 000000  Max Store : 000000
14  Discard Pkt : 000000
```

Line	Display item	Description	Remarks
Line 01	EPG Data Receive Err Details-X	The rightmost figure represents the number of the current detail screen. This number corresponds to the order of the EPG reception error log from the top.	
Lines 03-05, Reception conditions	Date Start Time END Time Host CH P-ON Kind	: Month/day when reception started : Time when reception started : Time when reception ended : Data-receiving channel : Methods for acquiring the EPG data (host scanning and downloading)	Only during initialization, host scanning is automatically executed to find the host broadcast.
Lines 07-10, details on errors during reception	Total Err	: Total numbers of errors during reception. The total number of Hamming Err, Trans Err and InvLine Err indicated on the Detail screen. A number 999,999 or greater is displayed as "999999."	Total Errors: If the total number of errors reaches two digits or greater, it is likely that EPG data acquisition failed. Display subscreen 1 of the first screen and check the electric field intensity from the AGC level.
	Pkt Rcv Num Pkt Snd Num	: Total number of received packages. A number 999,999 or greater is displayed as "999999." : Total number of packages that were sent to the application program among all the received packages. A number 999,999 or greater is displayed as "999999."	If the total number of received packages is 0, it is likely that the country and postal-code settings are wrong.
	InvLine Err	: Total number of errors that were generated by receiving data from invalid lines. A number 999,999 or greater is displayed as "999999."	
	Slice Cont	: Slice level control Auto-Tu Con, Manual - Syscon.	
	EQ	: Equalizer setting (ON, OFF)	
	LV	: Slice level (10~30 hex) (Only when the slice Count is Manual.)	

Note: The data on lines 12-14 are for software development, not for service use.

6.7 HDMI SERVICE MODE

[Purposes]

To check the statuses of the connected HDMI devices.

[Tool to be used]

Remote control unit for servicing (GGF1381)

- HDMI device
- HDMI cable

[How to enter] • Press the ESC, then DISP key 24 times.

Note: Do not press any key on the remote control unit supplied with the unit or for servicing while the HDMI debug screen is displayed.

[How to quit] Press the ESC key.

[Description of the mode]

1. HDMI MAIN information screen (First screen)

```
00 [HDMI]                                1/6
01  Connect:***   Reso :*********    Audio:***
02  DevType:****  Color:**********   APath:*****
03  TMDS   :***   HDCP :** : **      Fs   :***
                          SType:
[Video Check]
  Pic_Asp    :
  Active_Asp :
[Copyright Control Check]
  ACP_Type:        (Actual send:       )
  ChSts0:   ChSts1:   (C: , L: )
[Digital Tuner]
  HDMI Out: AC3 32kHz
  LL SPDIF: AC3 32kHz   DAC: 32kHz
```

(*1) [Tips]

Because all the data on connection and authenti--cation are canceled once the function of the connected HDMI device is set to a position other than HDMI, all the debugging data in Table 1 are deleted.

Table 1: Description of the items on the HDMI main information screen

Line	Item	Description	Remark
1	Connect	Connection status of the HDMI device	See Table 2.
	Reso	Output resolution	See Table 3.
	Audio	HDMI audio output status	See Table 4.
2	DevType	Type of connected device	See Table 5.
	Color	Output color	See Table 6.
3	TMDS	TMDS (video stream) signal output status	See Table 7.
	HDCP	HDCP Authentication status	See Table 8.
	Fs	Output audio Fs	See Table 9.

Table 2: Connection status of the HDMI device

Indication	Description
ON	Connected
HtPlg	Not connected but Hot plug is ON.
OFF	Not connected

Table 3: Output resolution

Indication	Description
480i NTSC	720x480i NTSC
480p NTSC	720x480p NTSC
720p NTSC	1280x720p NTSC
1080i NTSC	1920x1080i NTSC
1080p NTSC	1920x1080p NTSC
576i PAL	720x576i PAL
576p PAL	720x576p PAL
720p PAL	1280x720p PAL
1080i PAL	1920x1080i PAL
1080p PAL	1920x1080p PAL
----------	TMDS Off

[Description of the Main screen] (Continued)

Table 4: HDMI audio output status

Indication	Description
OFF	Output: Off
ON	Output: On

When the unit is connected to DVI device (refer to Table 5), the Audio is not outputted.

Table 5: Type of the connected device

Indication	Description
------	Not connected
HDMI	It has been confirmed that an HDMI device supporting HDCP is connected.
DVI	It has been confirmed that a DVI device supporting HDCP is connected.

When the unit is connected to device with no HDCP support, this display is "HDMI-" or "DVI-".

Table 6: Output color

Indication	Description
YCbCr4:2:2	Component 12 bits (YCbCr4:2:2)
YCbCr4:4:4	Component (YCbCr4:4:4)
RGB(0-255)	RGB full range (0-255)
RGB(16-235)	RGB (16-235)
----------	TMDS Off

Table 7: TMDS signal output status

Indication	Description
OFF	Output: Off
ON	Output: On

Table 8: HDCP

Left side : HDCP Authentication Status

Indication	Description
--	If an device supporting HDCP is connected, HDCP authentication is in progress.
OK	HDCP authentication succeeded.

Refer to this item only when HDMI or DVI is displayed for the item for the type of the connected device (Table 5).
If OK is not displayed although HDMI or DVI is displayed, it means that the HDCP authentication failed.

Right side : Check Revocation list

Indication	Description
--	Checking that the connected device (all downstream devices) is not registered to the Revocation list, or so.
OK	The connected device (all downstream devices) is not registered to the Revocation list.

Refer to this item only when HDMI or DVI is displayed for the item for the type of the connected device (Table 5).
When there is also no valid SRM (include Revocation list), "--" is displayed here.

Table 9: Fs

Indication	Description
32k	32kHz
44k	44.1kHz
48k	48kHz
96k	96kHz
96k/2	48kHz (original data of 96kHz is down-sampled.)
---	Audio Off

6.8 AGING MODE

[Purposes]

If symptoms regarding recording/ playback of discs and/or the HDD that your customer claimed are difficult to reproduce, they can be reproduced with a long-time test in Aging mode.

[Tools to be used]

Remote control unit for servicing (GGF1381)

Remote control unit supplied with the unit (VXX3221)

Commercially available, recordable DVD-R/+R and DVD-RW/+RW/ -RAM discs

[Notes]

- When aging for the DVD-RW/+RW/-RAM and HDD is executed, all recorded data on them will be erased.
- Commands from the remote control unit are accepted during Aging mode.
- If Aging mode is quit using the ESC key, indications on the FL display will return to normal display.
- Cancel timer settings before entering Aging mode.
- Set the recording rate beforehand. It cannot be changed during Aging mode.

[How to enter]

① Press the DVD key to switch to DVD.
② Load a recordable disc.
③ Select the input function of a recordable source.
④ After disc detection is performed, press the ESC then REP.B, and then PLAY keys on the remote control unit for servicing to enter Aging mode.

[How to quit]

Press the ESC key on the remote control unit for servicing to quit Aging mode and return to Normal mode.

Notes:

- If during recording: Recording is stopped.
- If during playback: Playback is paused.
- If during initialization: The unit stops after initialization is finished. ← (aging for ±RW/-RAM only)
- If the tray is being opened/closed: The unit stops after the tray is opened/closed. ←

[Description of operation] **Aging for the DVD-RW/DVD-R**

Aging for the DVD-RW/+RW/-RAM	Aging for the DVD-R/+R
During Aging mode, the following operations are repeated in the order shown below. ① The tray opens. ② The tray closes. ③ Initialization ④ Recording for 60 minutes ⑤ Playback for 45 minutes <DVD-RW> The initialization process in step 3 follows the setting specified in "Disc setting--Basic--Auto initialization of a DVD-RW." <DVD+RW> The initialization process in step 3 is the same as that described in "Disc setting--Initialization--Initialization of a DVD+RW." <DVD-RAM> In the initialization process in step 3, physical formatting is performed, if required. During Aging, the number of loops is indicated on the FL display, as shown below. [AGING 0001] If an error is generated, the aging operation stops. **Note:** Indications on the FL display are retained, and this information is also retained as an OSD.	During Aging mode, the following operations are repeated in the order shown below. ① The tray opens. ② The tray closes. ③ Recording for 1 minute ④ Recording pause for 6 minutes ⑤ Recording stops. ⑥ Playback for 1 minute ⑦ Playback pause for 6 minutes ⑧ Playback stops. **Note:** A continuous test of the above operations is possible for approximately 23 hours. After ② the tray closes, disc detection is performed, <DVD-R> In step 2, if the disc is judged to have recorded up to 99 titles, the operation stops at that point. <DVD+R> If the disc is judged to have recorded up to 49 titles, the operation stops at that point. On the FL display, the number of loops is retained. On the OSD display, the error indication is retained. During Aging, the number of loops is indicated on the FL display, as shown below. [AGING 0001] If an error is generated, the aging operation stops. **Note:** Indications on the FL display are retained, and this information is also retained as an OSD. **Note:** Recording time depends on the recording rate set. For example, if the recording rate is MN32, only up to 60 titles can be registered. Check the setting for recording rate before performing aging.

[Aging for the HDD]

[How to enter]

① Press the HDD key to switch to HDD.
② Press the ESC key then the REP.B, and then the PLAY keys on the remote control unit for servicing to enter Aging mode.

[How to quit]

Press the ESC key on the remote control unit for servicing to quit Aging mode and return to Normal mode.

Notes:

- If during recording: Recording is stopped.
- If during playback: Playback is paused.
- If during erasure of all memory data from the HDD, the unit stops after all memory data have been erased.

[Description of operation]

During Aging mode, the following operations are repeated in the order shown below.
① Erasure of all the memory data from the HDD
② Recording for 60 minutes
③ Playback for 60 minutes

* Take caution as all recorded data of the HDD is deleted.

[Tips]

During Aging, the number of loops is indicated on the FL display, as shown below.
[AGING 0001]

If an error is generated, the aging operation stops.

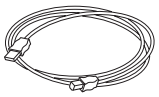
Note:
Indications on the FL display are retained, and this information is also retained as an OSD.

6.9 USB CHECK MODE

[Purposes]

As this unit is provided with two USB ports, operation checks of these ports are possible by connecting them (loop connection).

[Tools to be used]



USB cable (GGD1445)

Remote control unit supplied with the unit (VXX3221)

Remote control unit for servicing (GGF1381)

[How to enter this mode]

1. Connect Connector A (at the front panel) and Connector B (at the front panel), using a USB cable.
2. Enter USB Check mode.
   Press the ESC key on the remote control unit for servicing then press the TIMER REC key on the remote control unit supplied with this unit.

[How to quit]

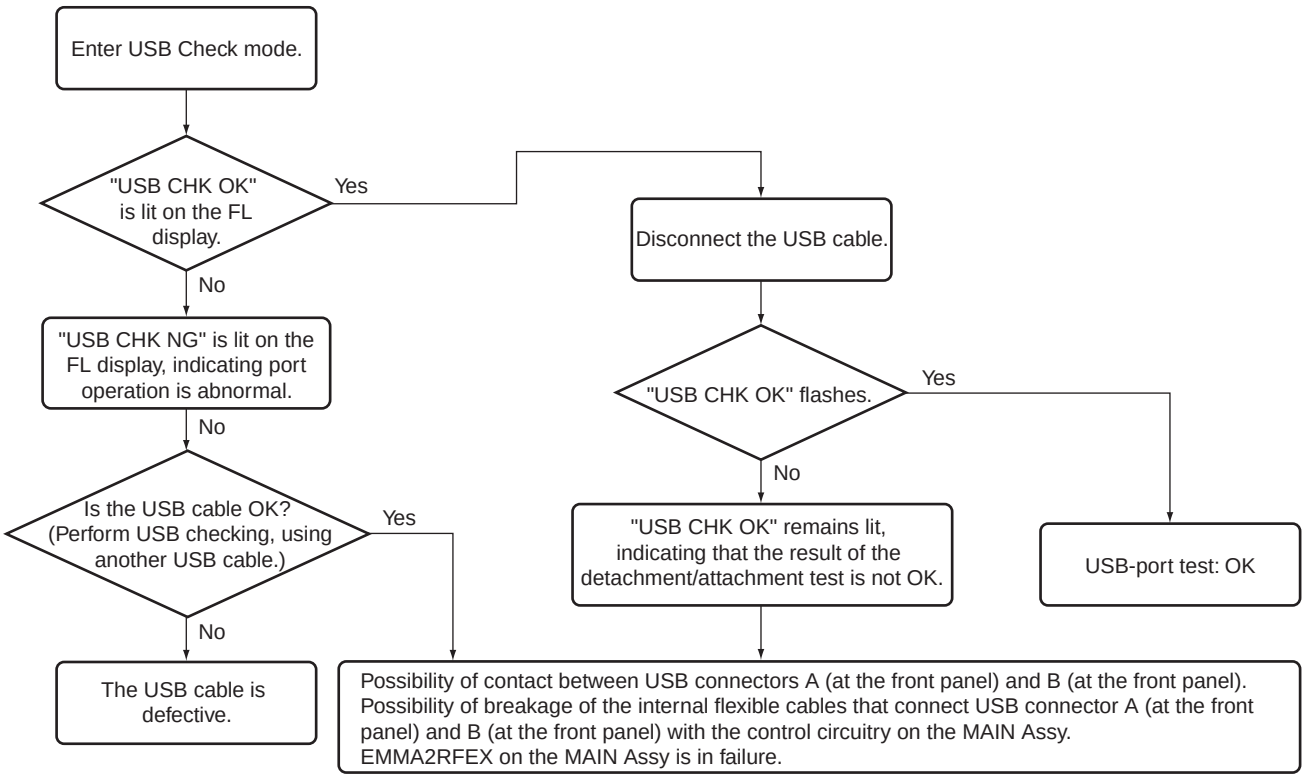
To quit while the ports are operating properly ("USB CHK OK" is lit.): Press the ESC key or the clear key.
To quit while port operation is abnormal: Turn the power off then back on.

[Procedures]

1. Check the indication on the FL display.
   When the two ports are operating properly: "USB CHK OK" is lit.
   When port operation is abnormal: "USB CHK NG" is lit.

2. When "USB CHK OK" is lit in Step 1, disconnect the USB cable in order to perform the detachment/attachment test.
   The indication on the FL display will change, as follows:
   If the result is OK: "USB CHK OK" will flash.
   If the result is not OK: "USB CHK OK" will remain lit.

[Troubleshooting]


Enter USB Check mode.
"USB CHK OK" is lit on the FL display.
Yes
No
Disconnect the USB cable.
"USB CHK NG" is lit on the FL display, indicating port operation is abnormal.
"USB CHK OK" flashes.
Yes
No
No
Is the USB cable OK? (Perform USB checking, using another USB cable.)
Yes
"USB CHK OK" remains lit, indicating that the result of the detachment/attachment test is not OK.
USB-port test: OK
No
The USB cable is defective.
Possibility of contact between USB connectors A (at the front panel) and B (at the front panel).
Possibility of breakage of the internal flexible cables that connect USB connector A (at the front panel) and B (at the front panel) with the control circuitry on the MAIN Assy.
EMMA2RFEX on the MAIN Assy is in failure.

6.10 HDD CHECK MODE

◆How to Diagnose Failure of the Hard Disc Drive (HDD)

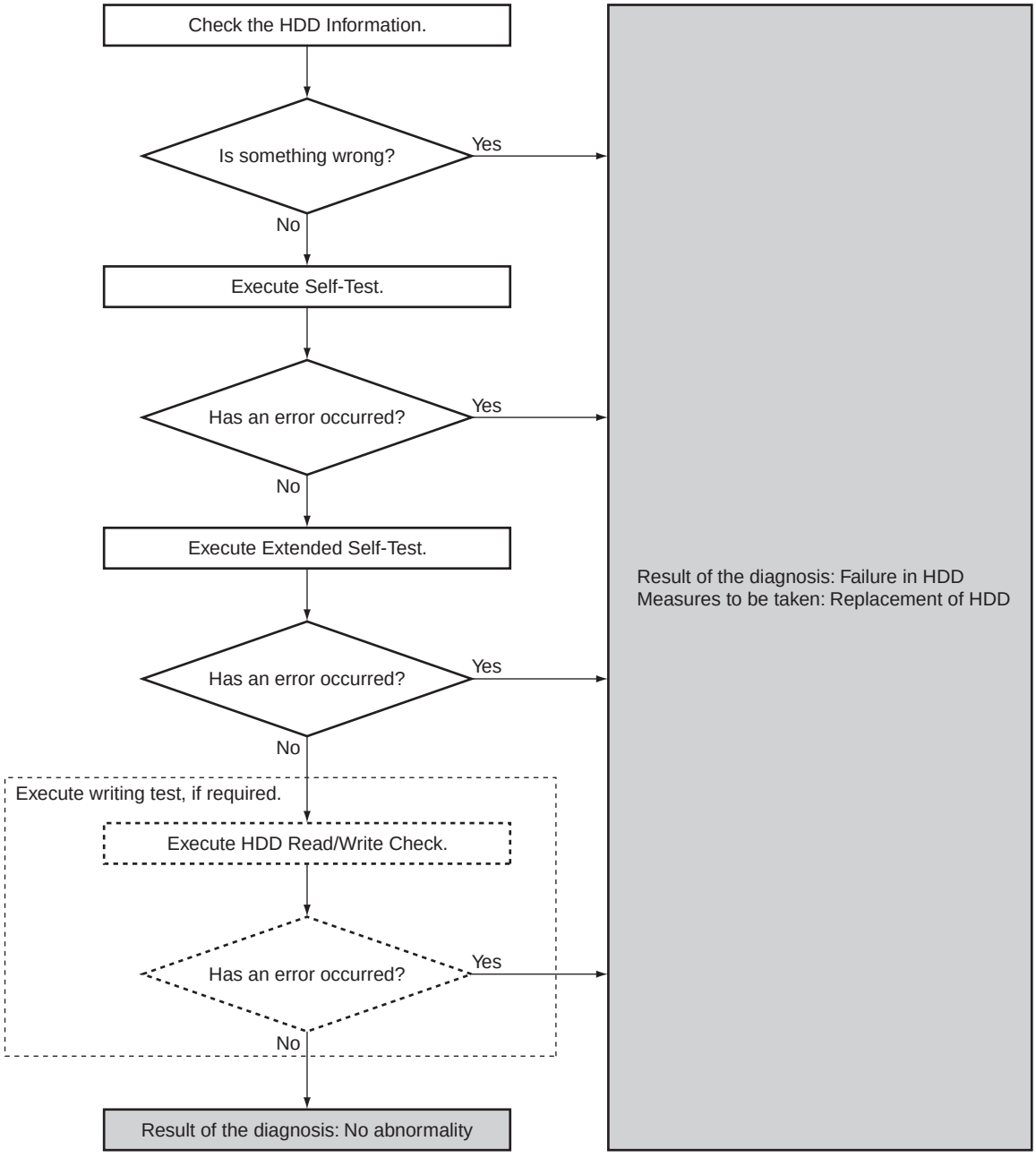
Purpose:
With use of the HDD-diagnostic program contained in the product itself, physical errors on the HDD can be diagnosed. Use this program to diagnose whether or not the HDD is in failure when one of the symptoms indicated below is recognized, or when a failure in the HDD is suspected.

Symptoms of failure in HDD:
(1) HDD Error
(2) Failure in HDD recording or playback
(3) HDD not recognized

Tool to be used:
Remote control unit for servicing (GGF1381)

◆Flow of HDD Diagnosis

(1) Flowchart of HDD diagnosis



(2) Overview of the diagnosis items

HDD Information	This is a display for checking the HDD information, such as the model name of the HDD, continuous power-on time, authentication status, and results of the diagnosis on the end of service life.
SELF TEST	This is a simplified diagnosis for the HDD. A serious failure in the HDD can be detected with this test. Time required for testing: Approx. 60 sec.
EXTENDED SELF TEST	This is a reading test across all sectors of the HDD. Data recorded on the HDD will not be erased, because no writing operation is performed. Time required for testing: Approx. 3.2 hours/250 GB (DVR-LX60D, DVR-LX60D-AV) 2 hours/160 GB (DVR-550HX-S)
HDD Read / Write Check	This is a writing, reading, and comparing test across all sectors of the HDD. **All data recorded on the HDD will be erased**, because all the data are to be overwritten. **Be sure to obtain your client's consent beforehand.** Time required for testing: Approx. 10 hours/250 GB (DVR-LX60D, DVR-LX60D-AV) 6.4 hours/160 GB (DVR-550HX-S)

◆ How to Start or Terminate the Diagnostic Program

How to start/terminate the diagnostic program

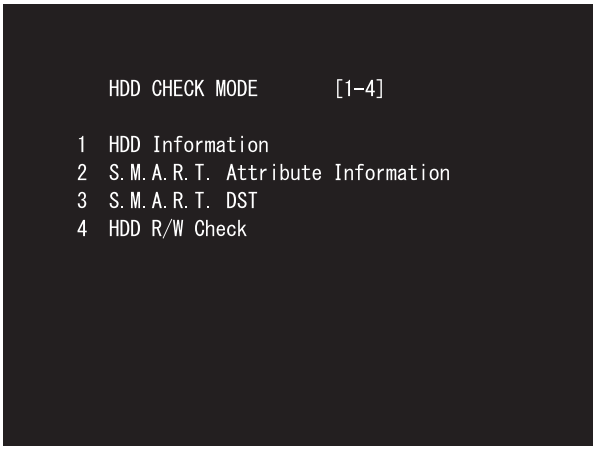
Use the remote control unit for servicing.
  How to start: Press the "ESC", "CX", "0", and "1" keys simultaneously.
  How to terminate: Press the "ESC" key.

Do NOT perform other operations on the unit while the HDD diagnosis is in progress. Although the diagnostic program is designed to function independently from the unit's functions, an operation on the unit during a diagnosis may cause a malfunction.

The status of the unit recommended during diagnosis is as follows: All stop, no timer recording (including auto-recording), and Input selection to L1-L3.

◆Diagnosis Procedures

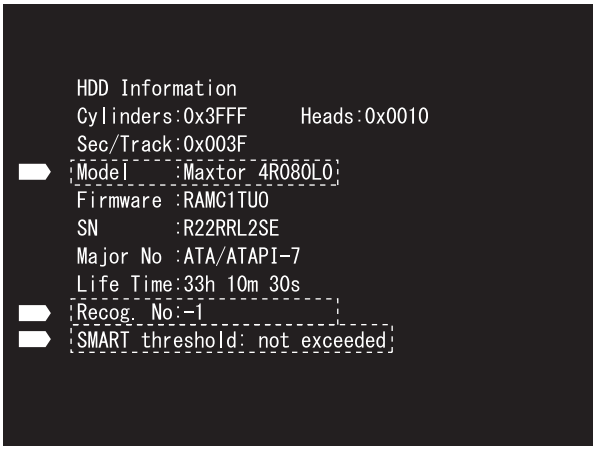
① Display the menu on the screen.
The menu indicated below is displayed when the diagnostic program is started. To enter each mode, press the corresponding key "1"-"4" on the remote control unit for servicing.



Tests to be executed
① HDD Information:
Check of the HDD information
② S.M.A.R.T. DST:
Executing a simplified test or a reading test of all data
③ HDD R/W Check:
Executing a writing/reading test of all data. All data on the HDD will be erased if this test is executed.

Note: "2. S.M.A.R.T. Attribute . . ." is not to be used.

② Check the HDD information.
Press the "1" key on the remote control unit for servicing. Check the following data:
Model: Is the correct model name of the HDD displayed?
Recog. No: Is a positive value displayed?
SMART threshold: Is "not exceeded" displayed?

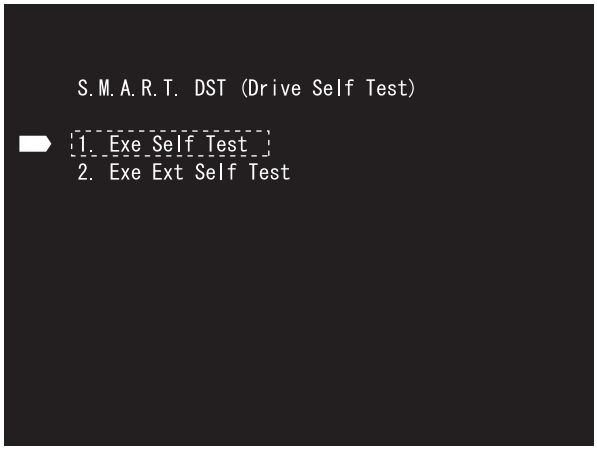


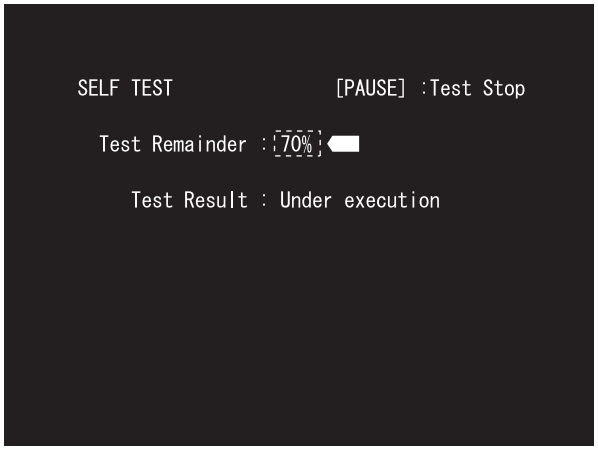
Detailed description
① Model:
For the correct model name, refer to the display of the unit.
② Recog. No:
Positive value: The HDD has been authenticated.
Negative value: The HDD has not been authenticated.
③ SMART threshold:
exceeded: The HDD has come to the end or near the end of its service life.
not exceeded: The HDD has not reached the end of its service life.

To return to the menu screen, press the "Clear" key.

③ Execute Self-Test.

Press the "3" key on the remote control unit for servicing while the menu screen is displayed.
When the following screen is displayed, press the "1" key to start the Self-Test.





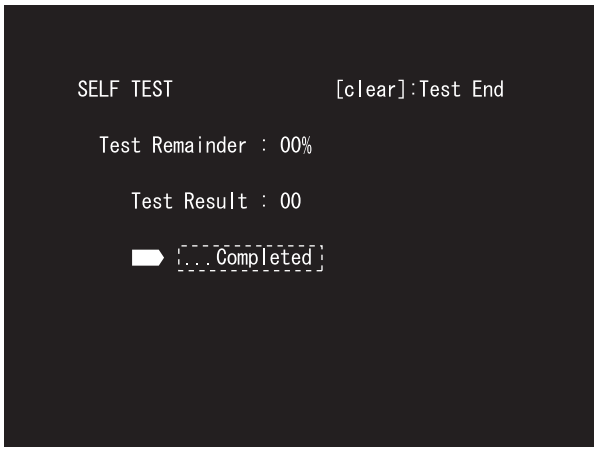
The progress of the test is displayed on the screen. The percentage remaining of the test is displayed on the screen, and the test is terminated when the percentage reaches 00%.
Check whether or not an error has occurred after the test is finished.

Diagnosis results

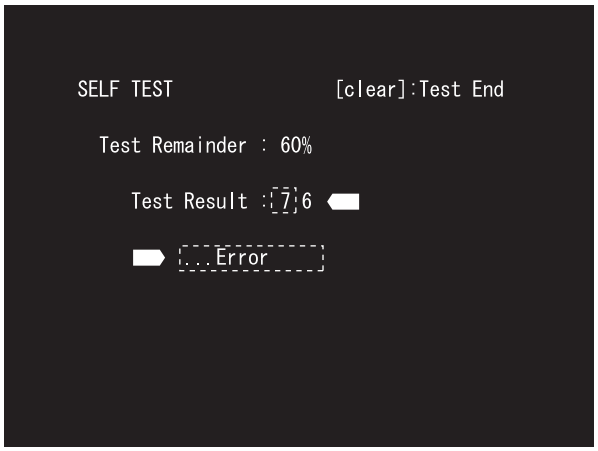
- Without an error: ". . . Completed" is displayed.
  Then, proceed to the Extended Self-Test.
- With an error: ". . . Error" is displayed. Look at the number in Test Result.
  If the place value for tens is 1 or 2, execute the Self-Test again.
  If it is from 3 to 7, the HDD must be replaced.

Note: If the result of the second test is the same, replacement of the HDD is required.

Example: No error

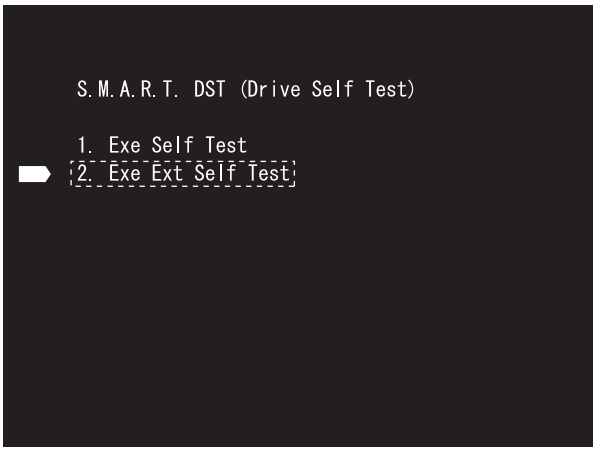


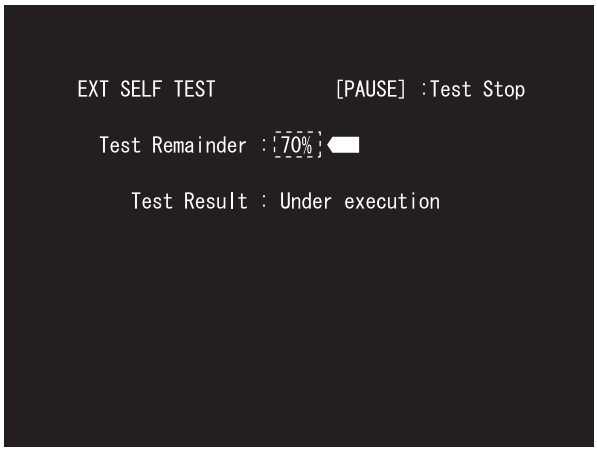
Example: With an error



To return to the menu screen, press the "Clear" key.

④ Execute the Ext (Extended) Self-Test.



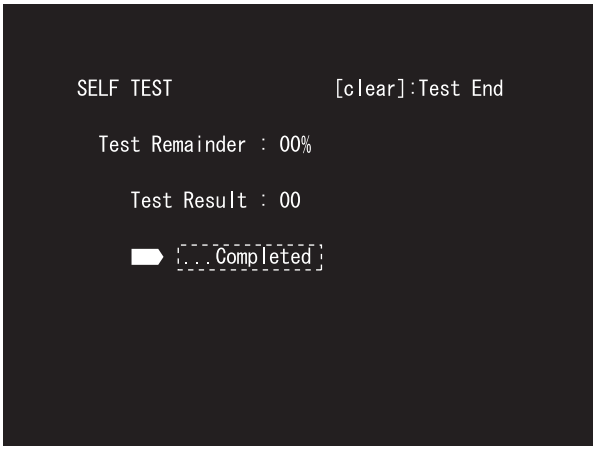


Press the "3" key while the menu screen is displayed, then the "2" key on the remote control unit for servicing. The Extended Self-Test starts. The percentage remaining of the test is displayed on the screen, and the test is terminated when the percentage reaches 00%. Check whether or not an error has occurred after the test is finished.

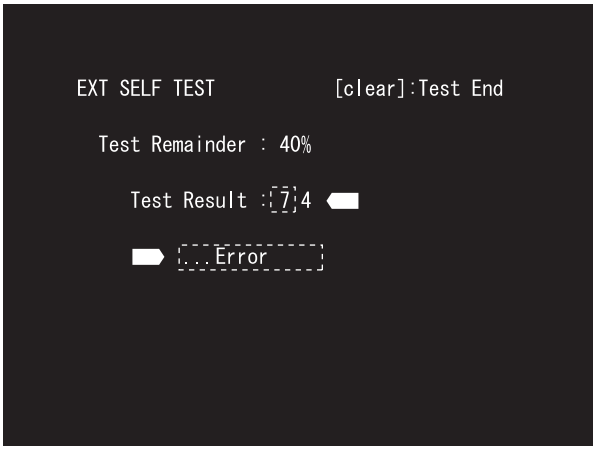
Diagnosis results
- Without an error: ". . . Completed" is displayed.
  If no error occurs up until this stage, HDD operations are normal except for writing operations.
  If the unit has a failure in HDD playback, a block other than the HDD may be in failure.
  If the unit's failure is in HDD recording, however, the next HDD Read/Write Check must be executed to test writing operations.
- With an error: ". . . Error" is displayed.
  Look at the number in Test Result.
  If the place value for tens is 1 or 2, execute the Ext Self-Test again.
  If it is from 3 to 7, the HDD must be replaced.

Note: If the result of the second test is the same, replacement of the HDD is required.

Example: No error



Example: With an error



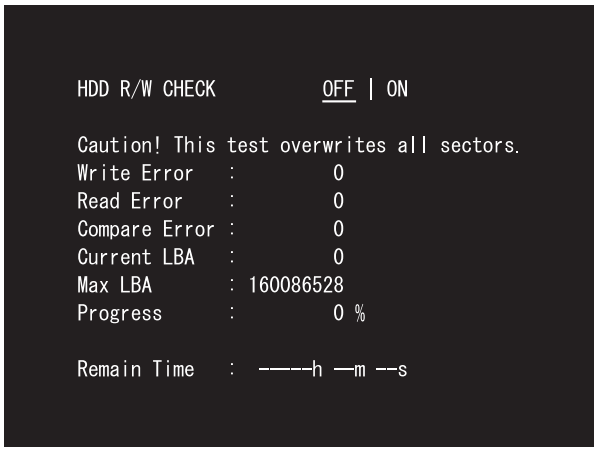
To return to the menu screen, press the "Clear" key.

⑤ Execute the HDD R/W Check.

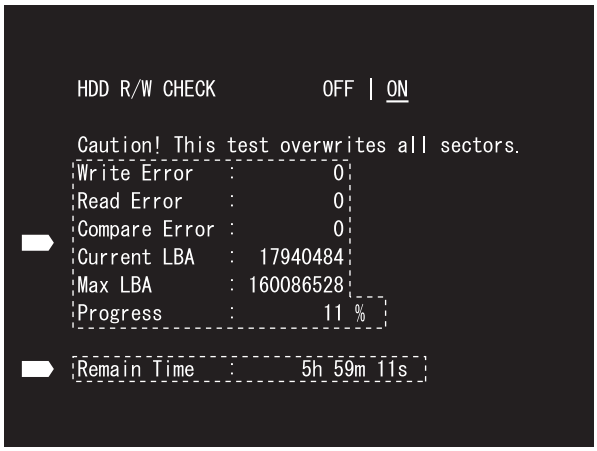
Before executing this test, **be sure to obtain your client's consent for erasure of HDD data**.

Press the "4" key while the menu screen is displayed then the "SKIP ►►I" key to start the HDD R/W Check.

To stop executing the test (OFF) while it is in progress, press the "SKIP I◄◄" key.


HDD R/W CHECK OFF | ON
Caution! This test overwrites all sectors.
Write Error : 0
Read Error : 0
Compare Error : 0
Current LBA : 0
Max LBA : 160086528
Progress : 0 %
Remain Time : ----h --m --s

The display on the left indicates the progress of the test.
The percentage of the test progress is displayed on the screen, and the test is finished when the percentage reaches 100%.


HDD R/W CHECK OFF | ON
Caution! This test overwrites all sectors.
Write Error : 0
Read Error : 0
Compare Error : 0
Current LBA : 17940484
Max LBA : 160086528
Progress : 11 %
Remain Time : 5h 59m 11s

Detailed description on each item on the screen

- Write Error: Number of write errors
- Read Error: Number of read errors
- Compare Error: Number of comparison errors
- Current LBA: The address during testing
- Max LBA: Highest address number of the HDD
- Progress: Percentage of test progress (%)
- Remain Time: Estimated time required for finishing the test across all sectors.
  Estimated time: 10 hours/250 GB (DVR-LX60D, DVR-LX60D-AV)
  6.4 hours/160 GB (DVR-550HX-S)

Diagnosis results

- If no error occurs in any of the Write/Read/Compare items, the HDD is in normal condition and is not required to be replaced. A block other than the HDD is in failure.
- If any error occurs, the HDD must be replaced.

To terminate the diagnostic program, press the "ESC" key.

7. DISASSEMBLY

Note 1: Do NOT look directly into the pickup lens. The laser beam may cause eye injury.
Note 2: Even if the unit shown in the photos and illustrations in this manual may differ from your product, the procedures described here are common.

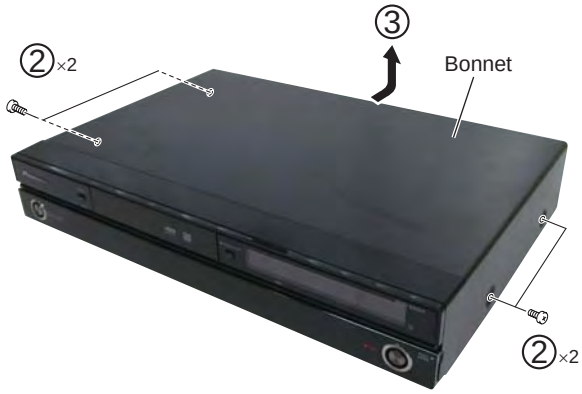
◆ Diagnosis

1 Bonnet

① Remove the five screws.

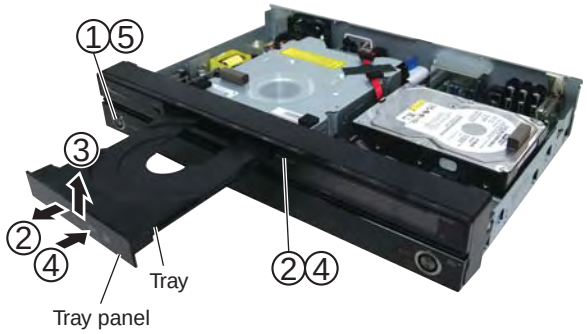
● **Rear view**

② Remove the four screws.
③ Remove the bonnet.



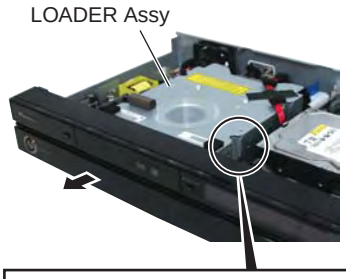
2 Tray Panel

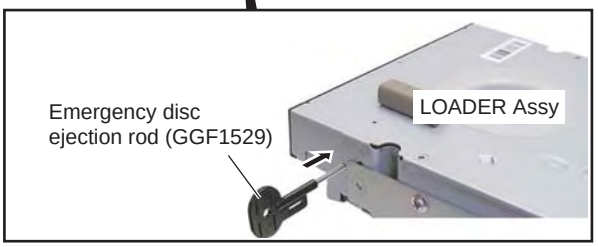
① Press the ⏻ STANDBY/ON button to turn on the power.
② Press the ⏏ OPEN/CLOSE button to open the tray.
③ Remove the tray panel.
④ Press the ⏏ OPEN/CLOSE button to close the tray.
⑤ Press the ⏻ STANDBY/ON button to turn off the power.



● **How to open the tray when the power cannot be turned on**

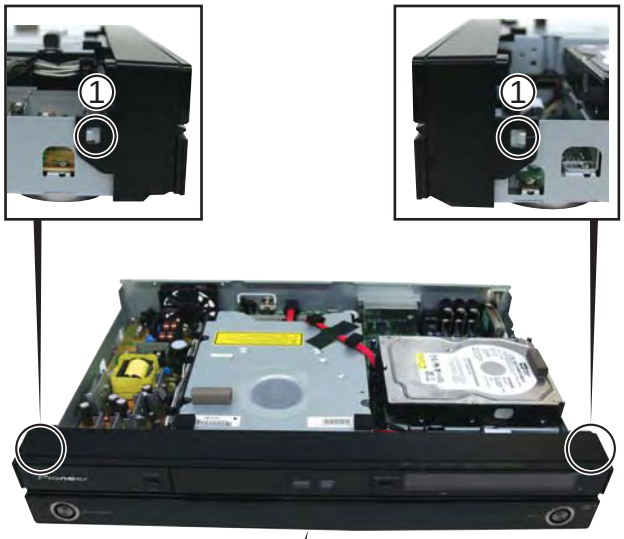
When the tray cannot be opened because the power cannot be turned on, it can be opened using the emergency disc ejection rod (GGF1529). (A long, thin rod about 1 mm in diameter can be used in place of the rod.)





3 Front Panel Section

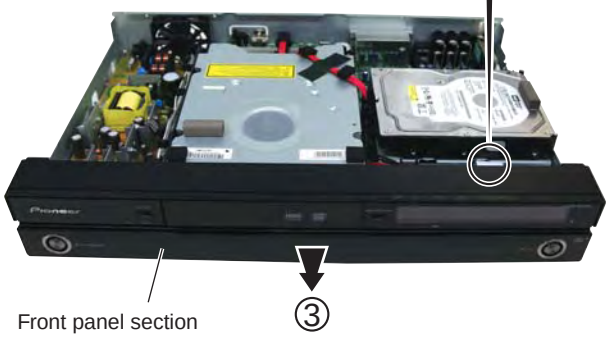
① Unhook the four hooks.



● Bottom view

② Disconnect the one flexible cable.

③ Remove the front panel section.



4 HDD and LOADER Assy

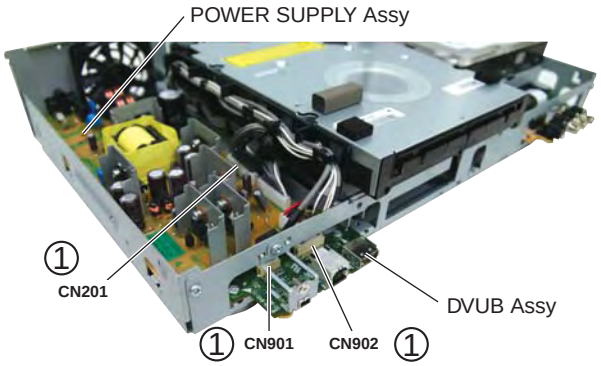
• HDD

① Remove the two screws.

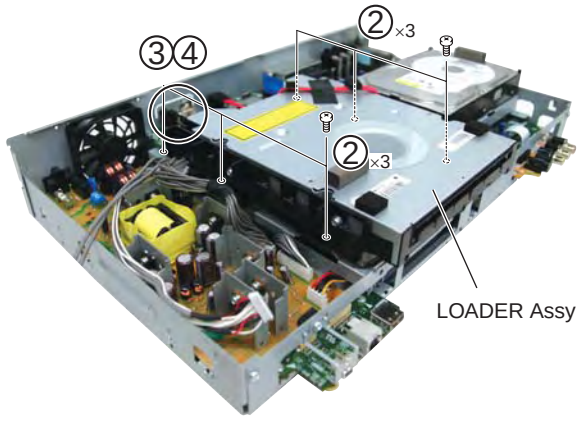
② Remove the two screws.

• LOADER Assy

① Disconnect the three connectors (CN201,CN901,CN902).



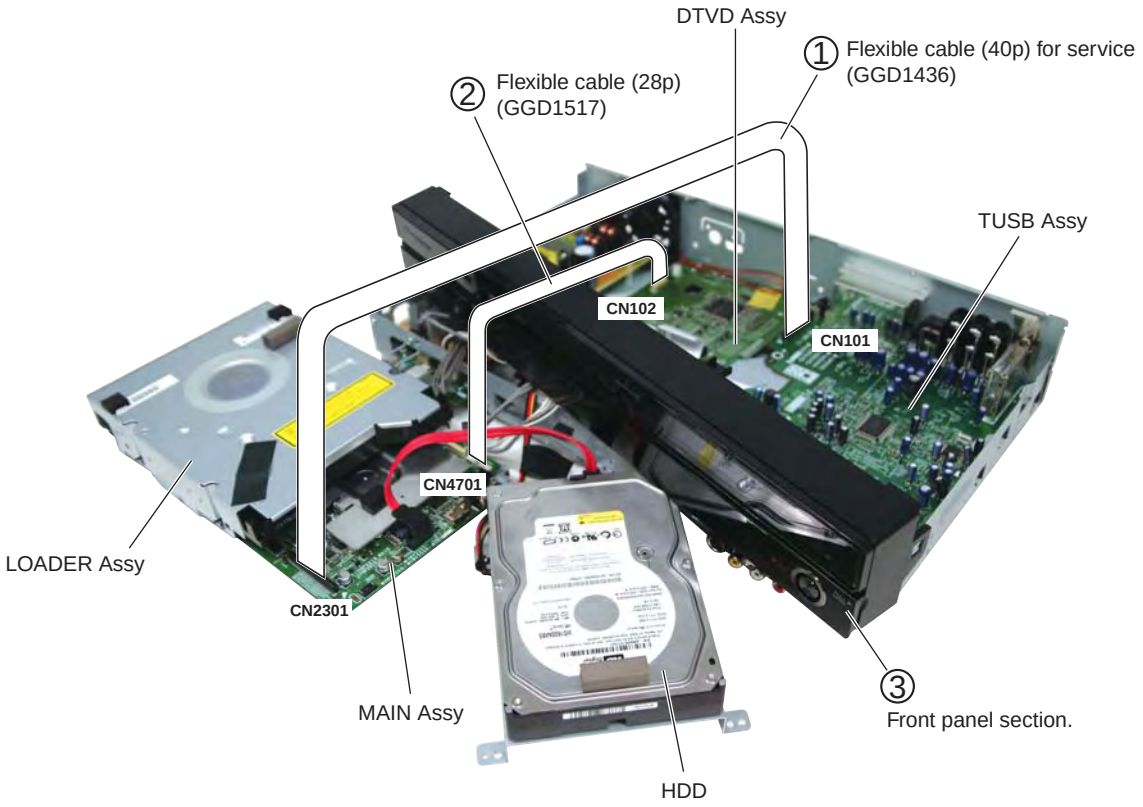
② Remove the six screws.
③ Remove the screw(Rear Panel Side).
④ Remove the screw(Rear Panel Side).



5 Diagnosis

① Connect the flexible cable for service.
② Connect the flexible cable for service.
③ Reassembling the front panel section.
④ Arrange the unit as shown in the photo below.

Diagnosis

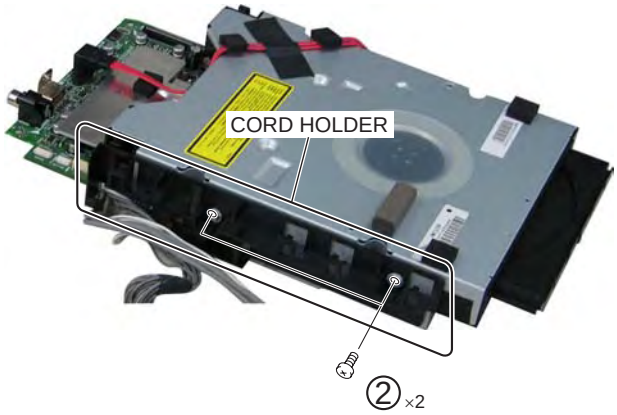


◆ Access to the MAIN Assy, Cleanning the Pickup Lens

• Writer Stay L and R

① Remove the two binders.

② Remove the two screws and CORD HOLDER.

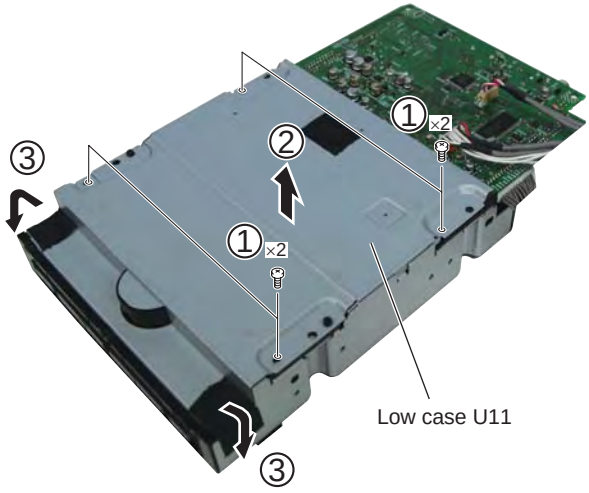


• Low Case U11 and Loader Assy

① Remove the four screws.

② Remove the low case U11.

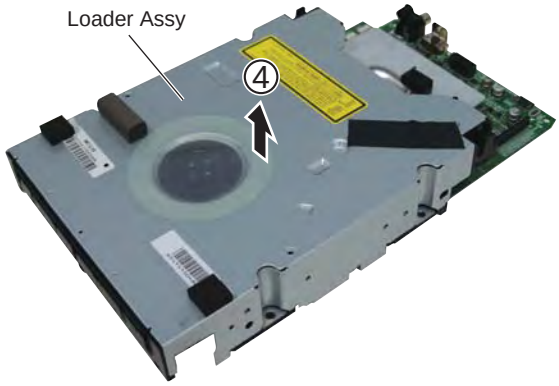
③ Remove the tape.



● **Bottom view**

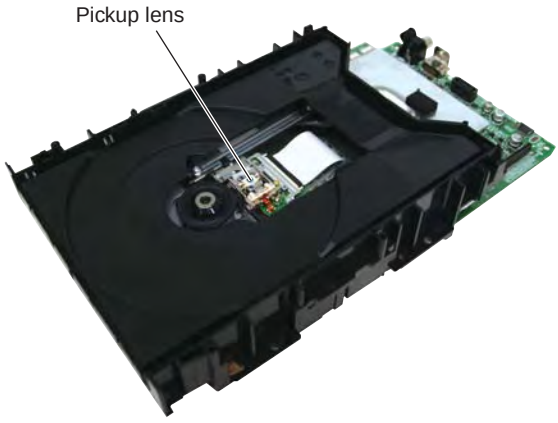
● **Bottom view**

④ Remove the Loader Assy.



Before shipment, be sure to clean the pickup lens, using the following cleaning materials:

Cleaning liquid : GEM1004
Cleaning paper : GED-008



8. EACH SETTING AND ADJUSTMENT

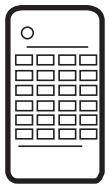
8.1 MODEL SETTING

[Purposes]

When the MAIN Assy and/or TUJB Assy that are(is) commonly used with another model are(is) replaced, they(it) must recognize the model of this unit.

Items to be set: The model number, destination, and region No. must be set.

[Tool to be used]



Remote control unit for servicing
(GGF1381)

[Notes]

- Once the setting has been made, it can never be changed. Be sure to make the setting correctly.
- As this setting resets the Assy(s) in question to the factory-preset status, it is recommended that you obtain the customer's consent beforehand.

[Procedures]

① After power on, the following screen is displayed on TV monitor. Press “1” by using the remote control unit for service. Do not choose “2” as it is for OEM models. If you have chosen “2”, disconnect the AC power cord.

```
[Recorder's Model Setting]
Input the number using the remote for Service

>     ?

Input No.    Manufacturer
[      1  :  P                ]
[      2  :  S                ]
```

② The following screen is displayed on TV monitor. Press four digits properly (for example " 0204 ") by using the remote control unit for service, according to the screen information.

```
[Recorder's Model Setting]
Input the number using the remote for Service

>  - - - -

Input No.    Model
[  0104   :   DVR-550HX/WY    ]
[  0204   :   DVR-LX60D/WY    ]
[  0105   :   DVR-550HX/WV    ]
[  0205   :   DVR-LX60D/WV    ]
[  0106   :   DVR-550HX/YRE   ]
[  0206   :   DVR-LX60D/YRE   ]
```

③ Disconnect then reconnect the AC power cord of the unit. Be careful not to impart vibration to the unit immediately after the AC power cord is disconnected.

④ Reset the recorder to all its factory settings.
(Make sure that the recorder is on. Press and hold ■ (STOP) key and press ⏻ (STANDBY/ON) key on the front panel.)
The recorder turns off with all settings reset.

```
DVR-LX60D/WY        VERSION : 1.04
   SYSCON   :  RELEASE_108
               Rev.1.5895.2.14
TUNERCON  :  1.181                      OK
     DRIVE   :  DVD-RW  DVR-L12X        OK
               1.00                     OK
 PIC SERIAL  :  000800004463
   HDD INT   :  ST3250820SCE            250


  DEVICE   :  E2R-FEx1.0      FLASH  :  64M
  REGION   :  2            C  :  0000000476
                        HDCP  :  0000000476
     DTB H  :  430   DTB S  :  108    OK
                        DTB B  :  13A6   OK
```

⑤ Press [ESC] then [DISP] keys by using the remote control unit for servicing, and then confirm each Model Name (for example " DVR-LX60D/WY").

⑥ End

8.2 LD POWER ADJUSTMENT

[Purposes]

If a combination of a main board and PU is changed, the LD power adjustment and adjustment for disc judgment needs to be made for a new combination of the main board and PU since the adjusted LD-power value becomes inappropriate for the new combination and stable playback and recording to disc becomes impossible.

[Tools to be used]

GGF1381 : Service Remote Control Unit
GGV1054 : CD-ROM (CDT-313)
GGV1036 : DVD-ROM DL (DVDT-002)
GGV1278 : Blank DVD-R (That's DR-C12WTY5PA)
GGV1282 : Blank DVD-RW (JVC VD-W120XH5)
GGV1284 : Blank DVD-RAM (maxell DRM120C.1P5S)

[Notes] Never turn the power off while any of the following operations is in progress:
- While laser diode (LD) power adjustment is being performed normally by the unit
- While adjustment for disc judgment is being performed

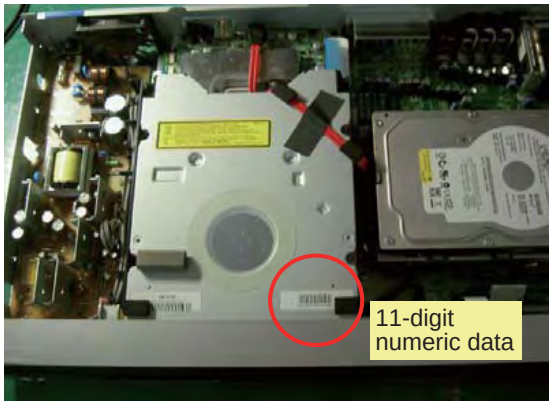
[Explanation on each adjustment mode]

- Drive Adjustment Mode

  This mode is used to select each mode for LD power adjustment.
  In this mode, you can confirm an 11-digit number provided for the LD power adjustment.
  The 11-digit number is stored in FLASH (IC200) of the main board.

- PU Data Setting Mode

  This mode is used to enter an 11-digit number provided for the LD power adjustment.
  If you have changed a combination of the main board and PU, enter an 11-digit number marked on the case of a loader which is provided in pairs with PU.
  The LD power adjustment is made by using this 11-digit number.



- Power Adjustment Mode

  This mode is used to execute the LD power adjustment and to check the progress of the adjustment.
  In case an error occurs during the adjustment, you can also check the error details in this mode.

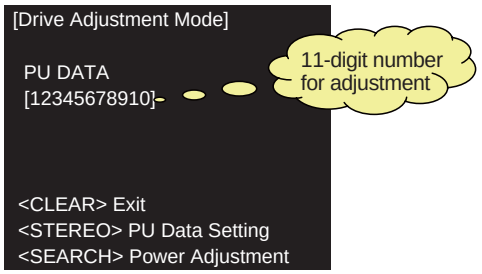
[How to enter Drive Adjustment Mode]

To enter the Drive Adjustment Mode, press [ESC]+[CX]+[1]+[0] on the remote control unit for service.

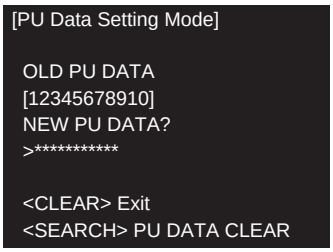
Though the LD power adjustment can be executed irrespective of the product functions, do not operate the product during the LD power adjustment to prevent misadjustment.

[Operation procedure]

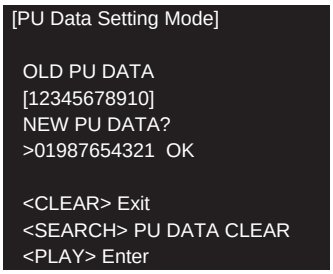
1. When you enter the Drive Adjustment Mode, the following screen is displayed. On this screen, you can check 11-digit numeric data stored in FLASH of MAIN Assy, and can also switch over between each mode.



2. To enter the PU Data Setting Mode, press [STEREO] on the remote control unit for service.
   Entering the PU Data Setting Mode displays the following screen.

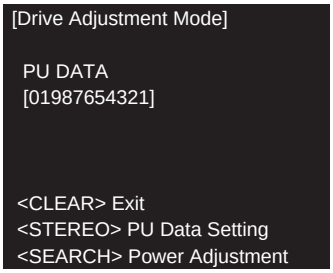


3. By pressing [0] to [9] keys on the remote control unit for service, enter an 11-digit number marked on the case of a loader provided in pairs with PU.
   Entering the 11-digit number displays the following screen.



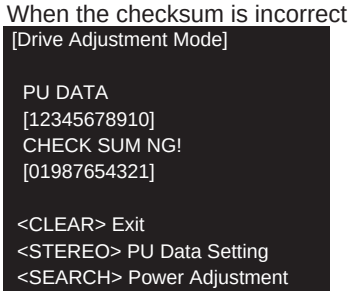
4. To enter the 11-digit number, press [PLAY] on the remote control unit for service.
   The 11-digit number contains 2-digit checksum data to prevent input errors.
   The screens displayed for the correct/incorrect check sum are as follows.

When the checksum is correct



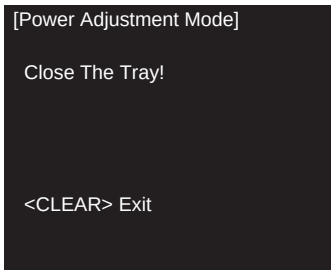
When the checksum is correct
Enter the Power Adjustment Mode and execute the LD power adjustment, as described in 5.

When the checksum is incorrect



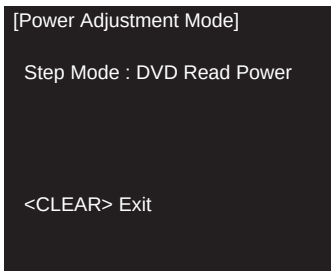
When the checksum is incorrect
The input data may be incorrect.
Return to 2 and enter the PU Data Setting Mode to re-enter the 11-digit number.

5. When the checksum is correct, enter the Power Adjustment Mode and execute the LD power adjustment.
   To enter the Power Adjustment Mode, press [SEARCH] on the remote control unit for service.
   Entering the Power Adjustment Mode displays the following screen and opens the tray automatically.



When the tray does not open
- Check if flexible cables and wire rods are connected properly.
- Errors in the loader, main board, or power source board are suspected.

6. Close the tray manually to execute the LD power adjustment mode.
   You can check the progress of adjustment in the following screen.

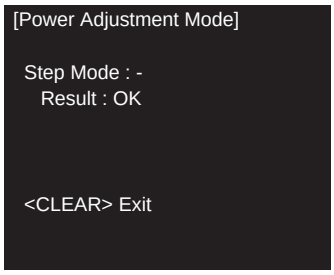


Explanation on Step Mode (time needed)
- DVD Read Power (approx. 10 sec.)
  Adjustment of DVD playback power
- RAM Read Power (approx. 20 sec.)
  Adjustment of RAM playback power
- DVD Write Power (approx. 40 sec.)
  Adjustment of DVD recording power
- CD Read Power (approx. 10 sec.)
  Adjustment of CD playback power
- DVD Disc Judgment (approx. 30 sec.)
  Adjustment for DVD disc judgment
- CD Disc Judgment (approx. 30 sec.)
  Adjustment for CD disc judgment

7. When DVD Disc Judgment is displayed in the Step Mode, the tray opens automatically.
   Place DVDT-002 in the tray. The tray closes after 15 seconds from the time it opened.
   If the adjustment for DVD disc judgment is completed successfully, CD Disc Judgment is displayed in the Step Mode.

If the adjustment for DVD disc judgment is not completed successfully
- A disc other than DVDT-002 may have been placed.
  Place DVDT-002 in the tray.

8. When CD Disc judgment is displayed in the Step Mode, the tray opens automatically.
   Place CDT-313 in the tray. The tray closes after 15 seconds from the time it opened.
   If the adjustment for CD disc judgment is completed successfully, the following screen is displayed.
   Since the judgment is completed successfully, press [CLEAR] on the remote control unit for service and exit from the adjustment mode.

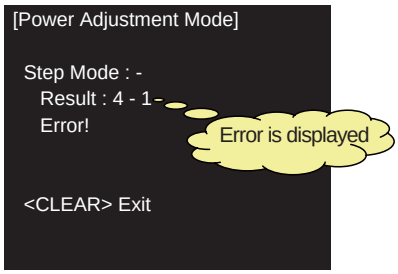


If the adjustment for CD disc judgment is not completed successfully
- A disc other than CDT-313 may have been placed.
  Place CDT-313 in the tray.

9. Turn off the power.

[Error information]

In case of errors in the Power Adjustment Mode, the following screen is displayed.



About error indication

[Left number]

The left number indicates the Step Mode in which the error has occurred.

- 2: Adjustment of DVD playback power
- 3: Adjustment of RAM playback power
- 4: Adjustment of DVD recording power
- 5: Adjustment of CD playback power
- 6: Adjustment for DVD disc judgment
- 7: Adjustment for CD disc judgment

[Right number]

The right number indicates the error information.

1 or 2: Error in the adjustment process

(Details of error)

- The PU flexible cables may not have been connected.
- TM or main board error is suspected.

3: Forced termination

This number is displayed when you pressed [CLEAR] on the remote control unit for service and executed forced termination.

[Contents to check]

1. Record the data to a designated disc (DVD-R / DVD-RW / DVD-RAM) in real time.
2. Measure an error rate at a place where recording is executed.
   Measurement method: Refer to the simplified error rate measurement method in the Service Mode.
3. Check that the error rate is 1e-3 or below.

If the error rate is out of specification

- Check if there is any defect or fingerprint on the disc. If you find any problem with the disc, change the disc and try the check again.
- The power adjustment may have been unsuccessful.
  Try the power adjustment again.

If the above two do not solve the problem, a defect with MAIN Assy or PU is suspected.

8.3 CPRM ID NUMBER AND DATA SETTING

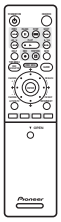
[Purposes]

For the DVD recorder,it is necessary with the recoding/playback of DVD-RW disc to set an individual number (ID number) and ID data to each recorder. If the number and data are not set correctly with the following procedure, cannot work with residual quantity 0:00 or operations in the future may not be guaranteed with RW disc. You will find the ID number to be set on the ID label on the rear panel.

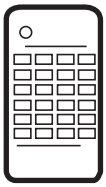
The Input is Necessary When:

- " CPRM ERR" is displayed on the FL display immediately after the power is turned on or in Stop mode.
- When the MAIN ASSY or the HDD is exchanged.

[Tools to be used]



Remote control unit supplied with the unit (VXX3221)



Remote control unit for servicing (GGF1381)

DVD Recorder Data Disc (Type 2)

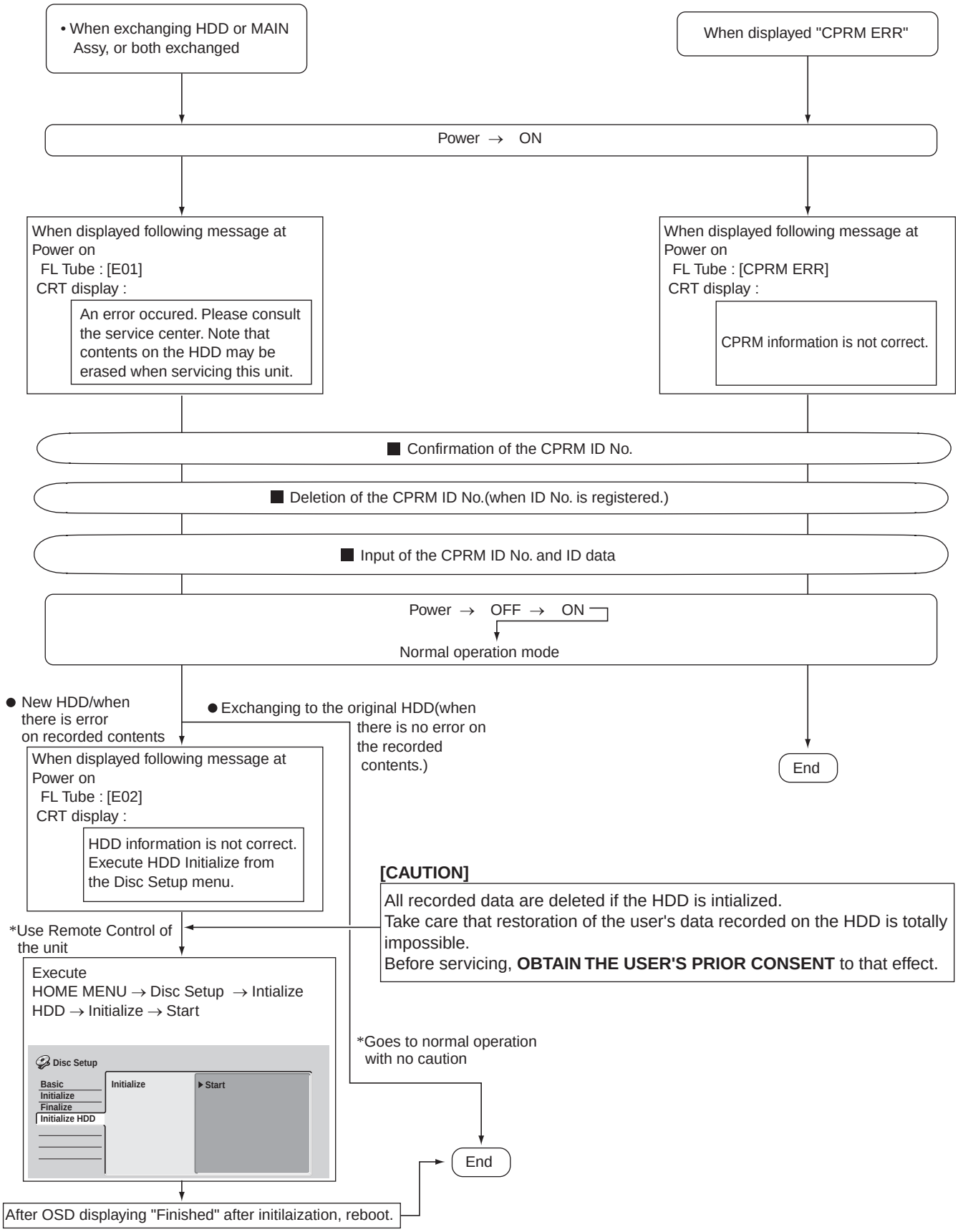
Be sure to use the latest disc (Type 2).
In Feb, 2007, the latest disc is GGV1305.

[Notes]

Important: If no ID label is found on the rear panel, write down the specified ID number by checking it according to "How to confirm the ID number" shown below.

- Input the ID number while the unit is in Stop mode.
- After the data are read from the data disc (Type 2), the disc will automatically be unloaded.

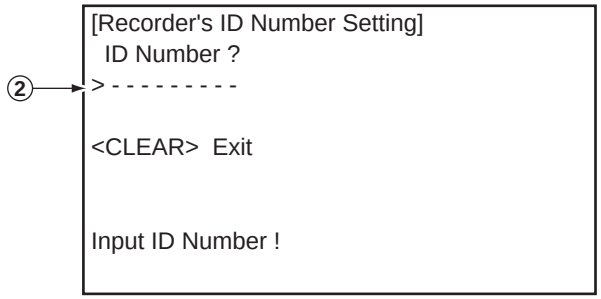
◆ Input Flow of the ID No. and ID Data When Exchanging HDD or MAIN Assy


• When exchanging HDD or MAIN Assy, or both exchanged
When displayed "CPRM ERR"
Power → ON
When displayed following message at Power on
FL Tube : [E01]
CRT display :
An error occured. Please consult the service center. Note that contents on the HDD may be erased when servicing this unit.
When displayed following message at Power on
FL Tube : [CPRM ERR]
CRT display :
CPRM information is not correct.
■ Confirmation of the CPRM ID No.
■ Deletion of the CPRM ID No.(when ID No. is registered.)
■ Input of the CPRM ID No. and ID data
Power → OFF → ON
Normal operation mode
● New HDD/when there is error on recorded contents
● Exchanging to the original HDD(when there is no error on the recorded contents.)
End
When displayed following message at Power on
FL Tube : [E02]
CRT display :
HDD information is not correct. Execute HDD Initialize from the Disc Setup menu.
[CAUTION]
All recorded data are deleted if the HDD is intialized.
Take care that restoration of the user's data recorded on the HDD is totally impossible.
Before servicing, OBTAIN THE USER'S PRIOR CONSENT to that effect.
*Use Remote Control of the unit
Execute
HOME MENU → Disc Setup → Intialize
HDD → Initialize → Start
Disc Setup
Basic
Initialize
Finalize
Initialize HDD
Initialize
Start
*Goes to normal operation with no caution
End
After OSD displaying "Finished" after initilaization, reboot.

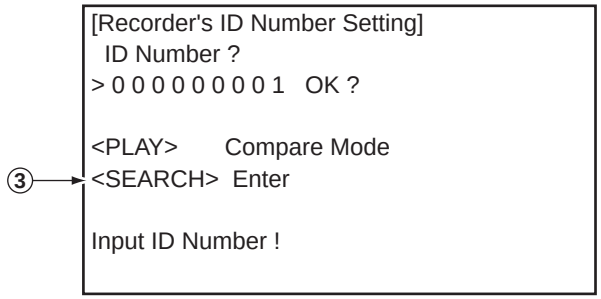
◆How to Input the ID Number and ID Data

① To enter the input mode, press ESC + STEREO keys sequentially in a status with no ID number set, such as after FLASH-ROM downloading.

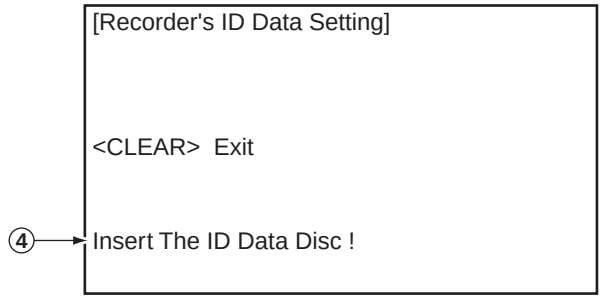
② As number input is enabled when the unit enters the input mode, input the 9-digit ID number.
(The entered number is also displayed on the FL display.)



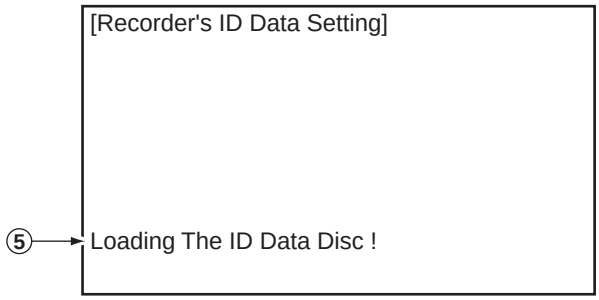
③ After inputting the number, press SEARCH keys to register the ID number.



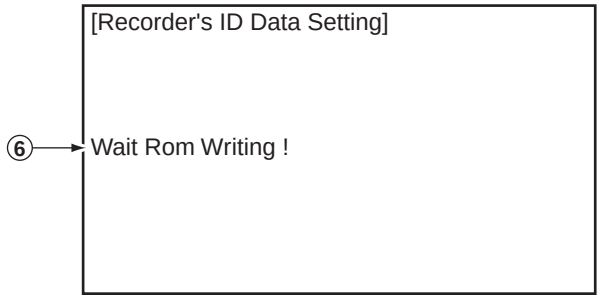
④ When the ID number has been registered, the unit enters the ID data input mode. (The FL display indicates "INSERT ID.")
In this condition, place the ID data disc on the tray and close the tray using the CLOSE key "■/⏏" on the player.



⑤ While the data are being read, the message shown in the figure at left is displayed on the screen.
(The FL display indicates "LOAD ID.")

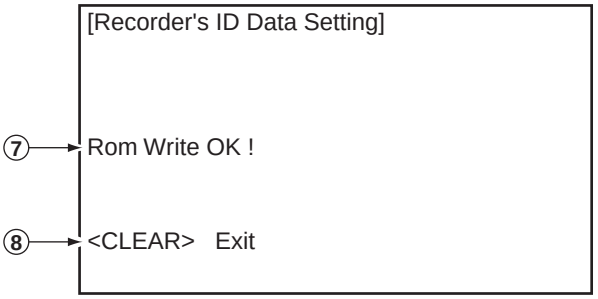


⑥ When the ID data have been read, the data are written to the FLASH-ROM.
(The FL display indicates "WRITE ID.")



⑦ When the ID data have been written to the FLASH-ROM, the message "Rom Write OK" is displayed on the screen.
(The FL display indicates "ID OK.")

⑧ After confirming this message, press CLEAR key to exit the input mode.

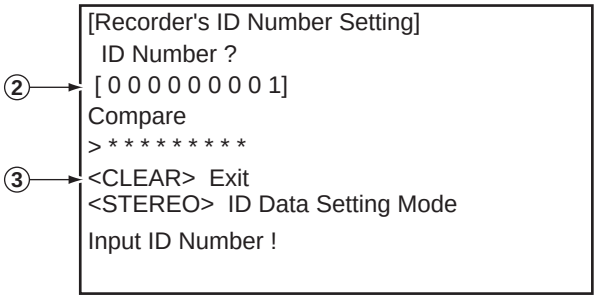


[How to Confirm the ID Number]

① Press ESC + STEREO keys sequentially with an ID number already set, and the unit enters the ID number confirmation mode.

② The set ID number is displayed on the screen (and on the FL display), permitting you to confirm it.

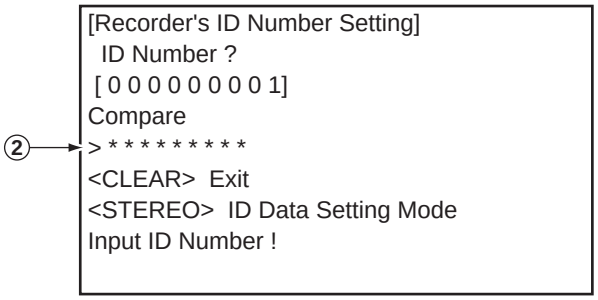
③ To exit this mode, press CLEAR key.



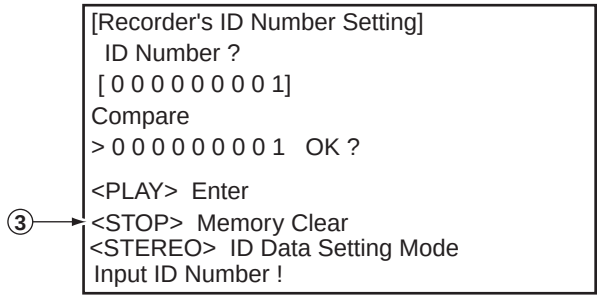
[How to Clear the ID Number]

① Press ESC + STEREO keys sequentially with an ID number already set, and the unit enters the ID number confirmation mode.

② Input the same number as the ID number you have set.



③ After inputting the number, press STOP key.
Only when the entered number matches the set ID number, the ID number is cleared and the unit exits this mode.
If the numbers do not match, you must return to step ②.
(STOP key is not accepted until 9 digits are entered.)



8.4 FIRMWARE UPDATE METHOD

[Purposes]

1. When the main board is replaced, the firmware versions for the system control computer, drive, and the TUFL microcomputer do not match, and operations of the unit may be destabilized.
   To match the versions for the above three, firmware downloading is necessary in the following two cases:
   ① After the model setting
   ② When NG is displayed on the first screen (version information, etc.) of Service mode
   ③ After changing MAIN Assy or TUSB Assy

2. Rewriting the firmware to the latest version may ameliorate the symptoms claimed by the customer.

There are the following two methods for update: disc update and serial update

◆ Disc Update

[Tools to be used]

Remote control unit for servicing (GGF1381)

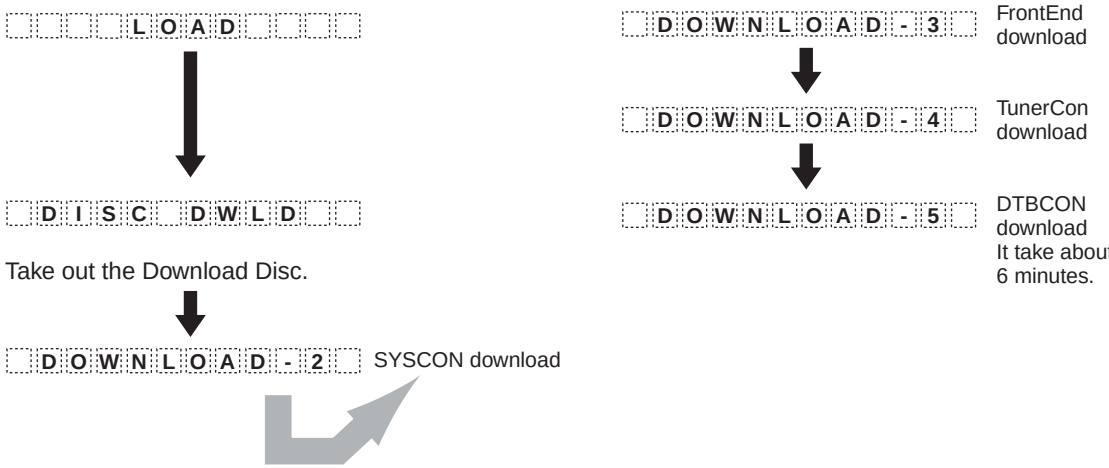
Update DISC

[Notes]

Be sure NOT to turn off the unit during update.
If the unit is turned off during update, the SYSCON, TUNERCON, DRIVE programs may not be properly rewritten, in which case the unit may not be able to initialize itself normally when turned on again.

[Procedure] ① Open a disc tray by pressing the "OPEN/CLOSE" button.
② Put the update disc on the tray. Press a " OPEN/CLOSE " button while pressing a "Record Stop" button on the frontpanel.
* The disc tray closes automatically and the disc is loaded.
* The disc tray opens automatically after loading.

FL display



* After update is completed, the power turns off, and a disc tray closes automatically.
* It takes for about 7-8 minutes until update is completed.

④ The power turns on and press a " ESC " button, then press " DISP " button on the remote control unit for servicing.
⑤ Confirm a firmware release version.
⑥ Press " ESC " button on the remote control unit for servicing in order to exit the test mode.

[Tips]

(1) If the power is not correctly turned on or when the power is shut off during update, proceed as follows before performing update again:

- In a case where update was incorrectly terminated while "DOWNLOAD-2" was displayed on the FL display:
  The SYSCON program will not function correctly.
  If the program cannot be update from the disc or through serial communication, replace the MAIN Assy.

- In a case where update was incorrectly terminated while "DOWNLOAD-3" was displayed on the FL display:
  The DRIVE program will not function correctly.
  If the program cannot be update from the disc, replace the MAIN Assy.

- In a case where update was incorrectly terminated while "DOWNLOAD-4" was displayed on the FL display
  The program for the tuner microcomputer will not function correctly.
  If the program cannot be update from the disc, replace the TUNERCON microcomputer (IC101 : TUSB Assy).

- In a case where downloading was incorrectly terminated while "DOWNLOAD-5" was displayed on the FL display
  The program for the IDTB microcomputer will not function correctly.
  If the program cannot be downloaded from the disc, replace the DTB microcomputer (DTVD Assy).

◆Serial Update

[Purposes]

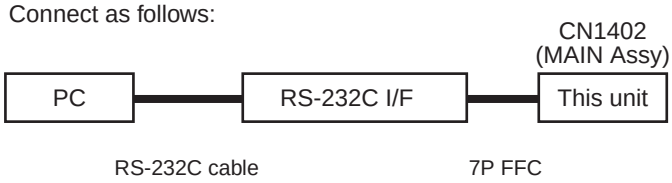
1. This method is used when disc update fails.

[Tools to be used]

* PC with serial port
* RS-232C straight cable
* RS-232C I/F jig (GGF1348)
* 7P FFC (VDA1681)
* Update program (UFU.exe)
* Firmware

[Connection]

Connect as follows:



[Procedures]

① Connect the 232C I/F jigs above way.

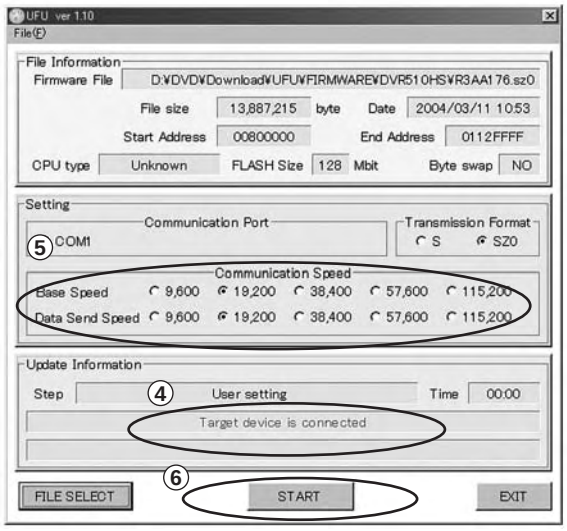
② Turn on the PC and start the " UFU.exe ".

③ Select the Firmware file. ("sz0" file)

④ Turn the DVD recorder on and start the update program.
" Target Device is connected " is appeared on the screen.

⑤ Select the Communication Speed (Baud Rate)
a) Base Speed 115,200
b) Data Send Speed 115,200

⑥ START
- Even if you click "START" button, sometimes "Communication Error" may come out one to twice, and update may fail.
  In this case, please click "START" again.
- Other factors can be considerd if update fails 3 times or more.
- And it takes about 20 minutes for updating the firmware.



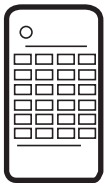
8.5 VIDEO ADJUSTMENT FOR SPECIFIC AREA

[Purposes]

Depending on the area, if a flicker may appear in a picture received by the tuner, it can be corrected or reduced with this setting.

[Tools to be used]

Remote control unit supplied with the unit (VXX3221)



Remote control unit for servicing (GGF1381)

◆Specific-Channel Setting Mode

In this mode, specific settings can be made for up to 12 channels.
For channels that do not have specific settings, the settings of General Setting mode are applied.

[How to enter this mode]

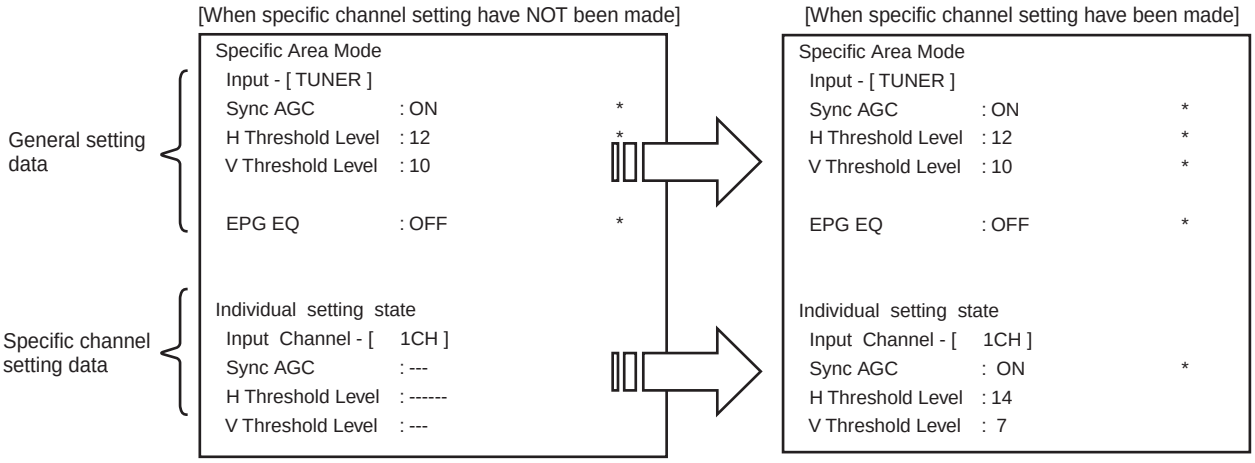
① Select a channel or line input (L1-L3) on which a specific setting is to be made.
② Press the ESC then CHP/TIM keys on the remote control unit for servicing. "General Setting mode" is displayed.
③ Press the DIG/ANA key in General Setting mode. Specific-Channel Setting mode is entered.

[How to exit] Press the ESC key on the remote control unit for servicing to return the Normal mode.

[Note] Setting is in effect only during recording/playback stop.

[Setting examples]

The setting examples in Specific-Channel Setting mode are shown below.
For details on each setting item, see "Table 1: Key operations in Specific-Area Setting mode."


[When specific channel setting have NOT been made]
[When specific channel setting have been made]
General setting data
Specific channel setting data
Specific Area Mode
Input - [TUNER]
Sync AGC : ON *
H Threshold Level : 12 *
V Threshold Level : 10
EPG EQ : OFF *
Individual setting state
Input Channel - [1CH]
Sync AGC : ---
H Threshold Level : ------
V Threshold Level : ---
Specific Area Mode
Input - [TUNER]
Sync AGC : ON *
H Threshold Level : 12 *
V Threshold Level : 10 *
EPG EQ : OFF *
Individual setting state
Input Channel - [1CH]
Sync AGC : ON *
H Threshold Level : 14
V Threshold Level : 7

[Tips]

- If a channel that does not have specific settings is displayed, the setting figures are displayed as hyphens (- -).
- If the setting figures are not displayed as hyphens, those settings have been specifically set even if they are identical to the default settings or those of General Setting mode.
- The setting indicated with an asterisk (*) is the default.
- The channels to be indicated for "Input Channel" are as shown below:
  Line inputs: L1-L3, DV (DV is not valid for specific-area settings.)
  Tuner channels: Channels received by the tuner (channels to be set in Specific-Channel Setting mode, etc.)

[Tips]

- Indication when the maximum number (12) of channels have individual settings
  If a channel that does not have specific settings is currently selected, the indication will be as shown below, and individual data items cannot be set for that channel. To set individual data items for the currently selected channel, you must clear any specific-channel settings for one or more channels.

```
Specific Area Mode
  Input - [ TUNER ]
  Sync AGC          : ON          *
  H Threshold Level : 12          *
  V Threshold Level : 10          *

  EPG EQ            : OFF         *

Individual setting state
  Sorry !
  You can store only 12 channels
  for Specific Area mode.
```

[H Threshold Level]
The slice level setting for the horizontal(H)-sync separation circuit can be changed. By your changing the slice level, horizontal sync disturbance may be ameliorated. Set the slice level to a value with which the least sync disturbance is seen.

[V Threshold Level]
The slice level setting for the vertical(V)-sync separation circuit can be changed. By your changing the slice level, vertical sync disturbance may be ameliorated. Set the slice level to a value with which the least sync disturbance is seen.

[Receiver sensitivity setting for an electronic program guide (EPG)]
The sensitivity when receiving an electronic program guide can be selected. Set the sensitivity to "High" only if reception is unstable.

◆General Setting Mode

[How to enter this mode]

- To shift from Specific-Channel Setting mode:
  Each time the DIG/ANA key is pressed, Specific-Channel Setting mode and General Setting mode are alternately selected.

- To shift from Normal mode (recording/playback stop):
  Press the ESC then CHP/TIM keys.

[How to exit] Press the ESC key to return the normal mode.

[Setting examples]

Show setting example on the General Setting mode screen to the following.
Regarding setting of actual each item, refer to table 1 (key operations in specific-area setting mode).

[General Setting mode screen]

```
Specific Area Mode
  Input - [ TUNER ]
  Sync AGC          : ON          *
  H ThresholdLevel  : 12          *
  V Threshold Level : 10          *

  EPG EQ            : OFF         *
```

*: Setting is the default.

[Display in General Setting mode when the channel currently displayed has specific settings]

```
Specific Area Mode
  Input - [ TUNER ]
  Sync AGC          : ON          *
  H ThresholdLevel  : 12          *
  V Threshold Level : 10          *

  EPG EQ            : OFF         *

This channel is set up
  individually.
```

[Tips]

- General Setting mode can be entered only during recording/playback stop.
- The currently selected input mode (TUNER or LINE) is displayed for "Input."
- If L1, L2, L3, or DV is selected for input, general settings for the line input can be made (DV is not valid for specific-area settings), and if TUNER is selected, general settings for the tuner input can be made.

Table 1: key operations in specific-Area setting mode (1/2)

Key operations in Specific Area Setting mode of the remote control units are shown in the table below (the keys are of the remote control unit for servicing unless otherwise stated):

Key	Operation	Switching (*: Default)	Remarks	Used in Specific-Channel Setting mode	Used in General Setting mode
[DIG/ANA]	Switches General setting mode and Specific setting mode.	–	–	○	○
[INPUT SELECT], [CHANNEL +/-] (Remote control unit supplied with this unit)	Switches inputs or channels.	–	–	○	○
[SIDE A] , [SIDE B]	Sets SyncAGC.	ON(*) / OFF	ON : The sync level is set to an appropriate value. OFF : Cancel the Sync AGC.	○	○
[Rev ×3], [×3 Fwd]	Sets H Threshold.	0 – 15 (Default : 12)	[Rev ×3] : Decreasing 1 by 1 in the range 0 to 15. (Cyclic operation) [×3 Fwd] : Increasing 1 by 1 in the range 0 to 15. (Cyclic operation)	○	○
[Rev CHAPTER SKIP] [CHAPTER SKIP Fwd]	Sets V Threshold Level.	0 – 15 (Default : 10)	[Rev CHAPTER SKIP] : Decreasing 1 by 1 in the range 0 to 15. (Cyclic operation) [CHAPTER SKIP Fwd] : Increasing 1 by 1 in the range 0 to 15. (Cyclic operation)	○	○

Table 1: key operations in specific-Area setting mode (2/2)

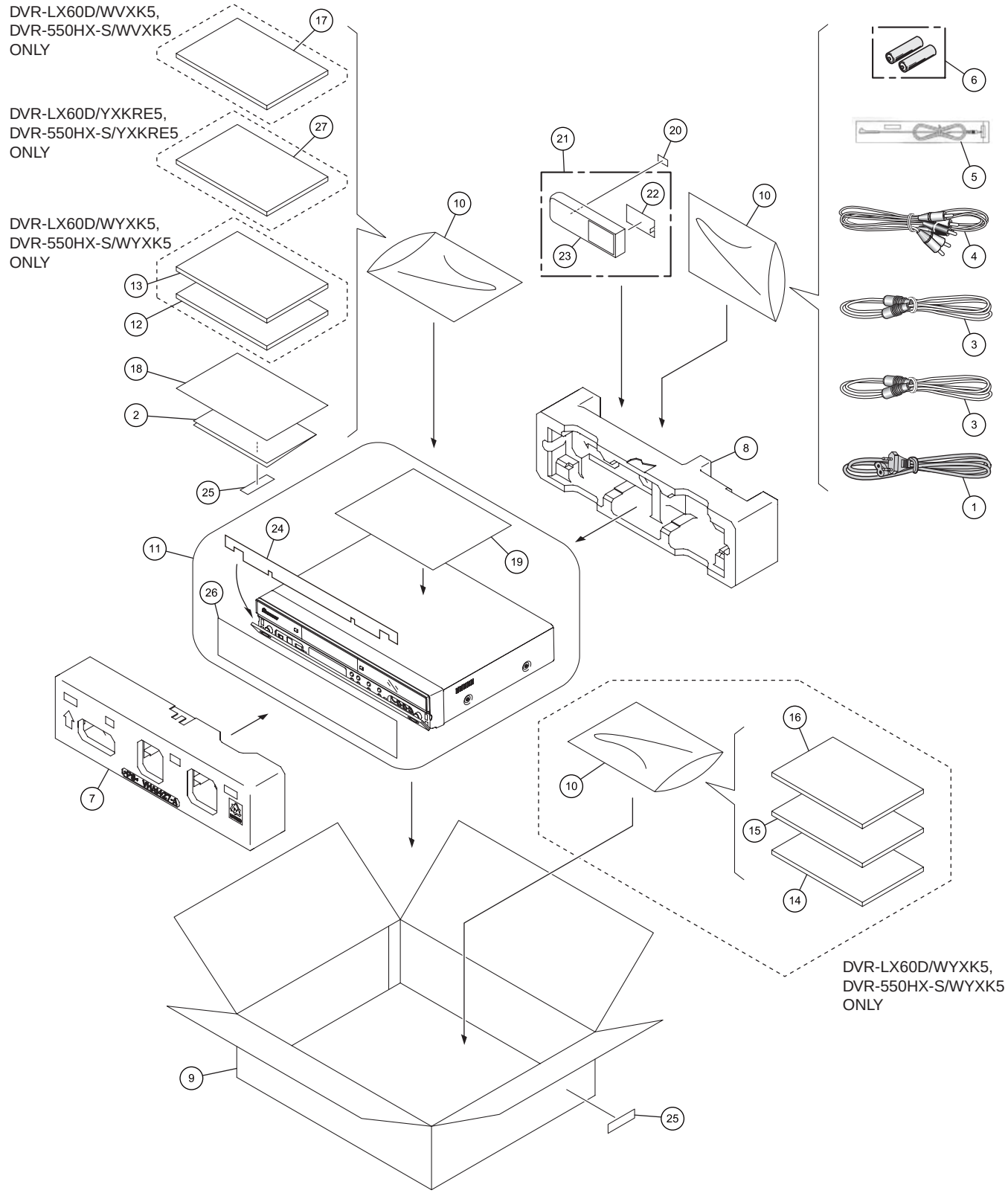
Key	Operation	Switching (*: Default)	Remarks	Used in Specific-Channel Setting mode	Used in General Setting mode
[PLAY]	All channels that have specific setting data will be canceled, and the specific data will be initialized.	–	The General Setting data will not be changed.	○	×
[CLEAR]	Specific-Channel Setting mode: If the currently selected channel has its specific setting, that setting will be canceled. (By canceling the specific setting for that channel, the number of remaining channels that can have specific settings will be increased by one.) General Setting mode: Settings of General Setting mode are initialized.	–	Specific-Channel Setting mode: All specific data are initialized. The General Setting data will not be changed. General Setting mode: All general setting data are reset to default. The specific setting data will not be changed (will be retained).	○	○
[PAUSE]	The specific-channel-setting data for the currently selected channel are reset to default.	–	The General Setting data will not be changed (will be retained).	○	×
[ESC]	To quit Setting mode for a specific area and clear the on-screen display.	–	–	○	○

Notes:
• Each key listed in Table 1 above is active only while the tuner is completely stopped.
• The setting values will not be reset to default even if resetting to the state at the time of shipment is performed.

9. EXPLODED VIEWS AND PARTS LIST

NOTES:
- *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Screws adjacent to ▼ mark on product are used for disassembly.*
- *For the applying amount of lubricants or glue, follow the instructions in this manual. (In the case of no amount instructions, apply as you think it appropriate.)*

9.1 PACKING



(1) PACKING SECTION PARTS LIST

Mark	No.	Description	Part No.
⚠	1	Power Cable	See Contrast table (2)
NSP	2	Warranty Card	ARY7065
	3	RF Antenna Cable (PAL)	VDE1075
	4	Audio / Video Cable (1.5m) (red/white/yellow)	VDE1077
	5	G-Link Cable (3m)	VDX1010
NSP	6	Dry Cell Batteries (AA/R6P)	See Contrast table (2)
	7	Front Pad	VHA1425
	8	Rear Pad	VHA1426
	9	Packing Case	See Contrast table (2)
	10	Polyethylene Bag	VHL1051
	11	Mirror Sheet	VHL1095
	12	Operating Instructions (French)	See Contrast table (2)
	13	Operating Instructions (German)	See Contrast table (2)
	14	Operating Instructions (Italian)	See Contrast table (2)
	15	Operating Instructions (Dutch)	See Contrast table (2)
	16	Operating Instructions (Spanish)	See Contrast table (2)
	17	Operating Instructions (English)	See Contrast table (2)
	18	HDD Caution 8L	VRR1072
	19	HDD Caution 8L B	VRR1077
	20	WEEE Label	See Contrast table (2)
	21	Remote Control	See Contrast table (2)
	22	Battery Cover	See Contrast table (2)
	23	Top Cover	See Contrast table (2)
	24	Sheet	See Contrast table (2)
NSP	25	Serial Label S	VRW2017
	26	Nonwovwn Cloth Cover	See Contrast table (2)
	27	Operating Instructions (Russian)	See Contrast table (3)

(2) CONTRAST TABLE

DVR-LX60D/WYXK5, DVR-LX60D/WVXK5, DVR-LX60D-AV/WYXK5, DVR-550HX-S/WYXK5 and DVR-550HX-S/WVXK5 are constructed the same except for the following :

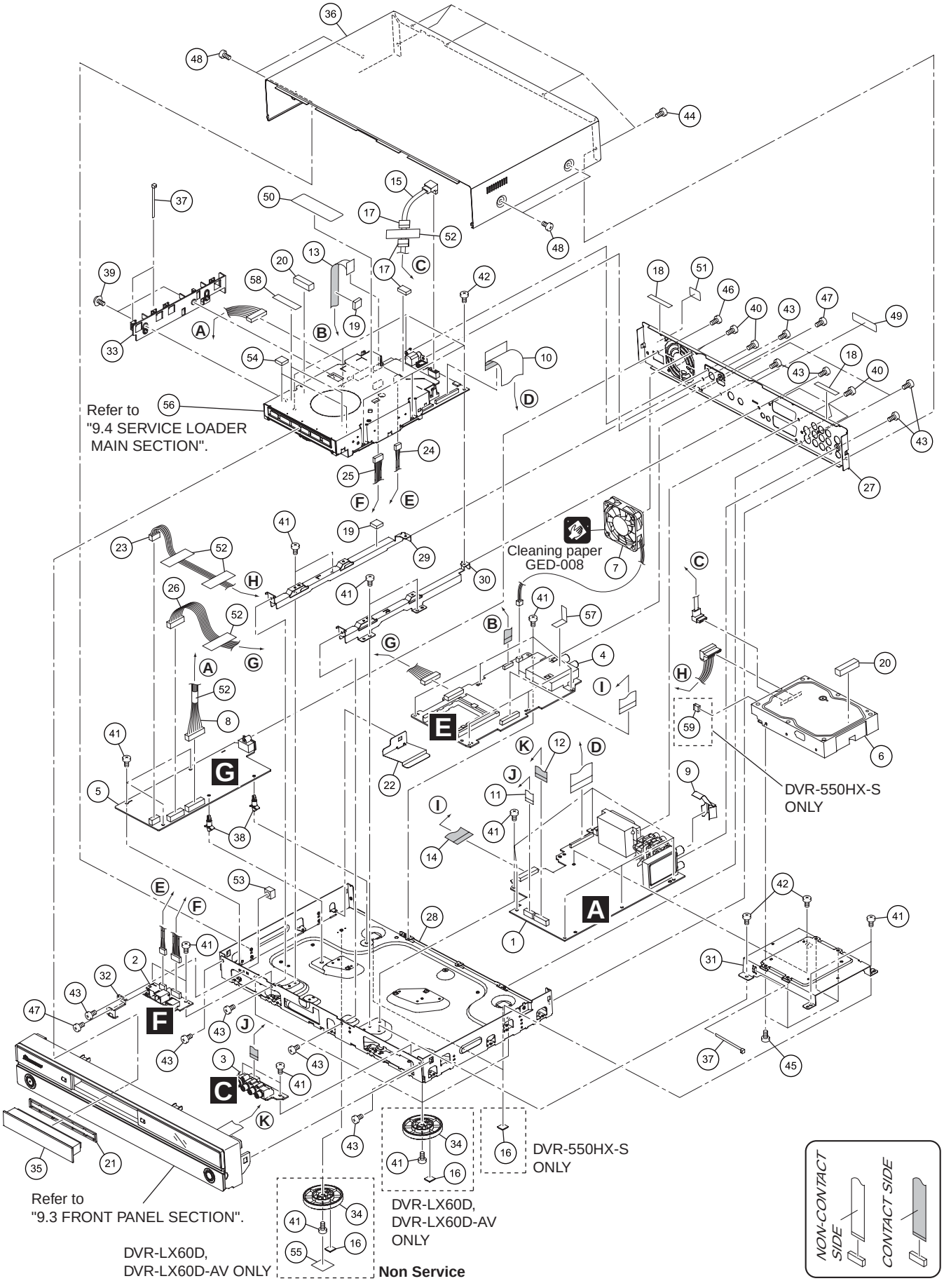
Mark	No.	Symbol and Description	DVR-LX60D/ WYXK5	DVR-LX60D/ WVXK5	DVR-LX60D-AV/ WYXK5	DVR-550HX-S/ WYXK5	DVR-550HX-S/ WVXK5
⚠	1	Power Cable	ADG1127	ADG7077	ADG1127	ADG1127	ADG7077
NSP	6	Dry Cell Batteries (AA/R6P)	VEM1010	VEM1010	Not used	VEM1010	VEM1010
	9	Packing Case	VHG2796	VHG2812	VHG2818	VHG2795	VHG2810
	12	Operating Instructions (French)	VRC1379	Not used	Not used	VRC1378	Not used
	13	Operating Instructions (German)	VRC1384	Not used	Not used	VRC1383	Not used
	14	Operating Instructions (Italian)	VRC1388	Not used	Not used	VRC1387	Not used
	15	Operating Instructions (Dutch)	VRC1392	Not used	Not used	VRC1391	Not used
	16	Operating Instructions (Spanish)	VRC1396	Not used	Not used	VRC1395	Not used
	17	Operating Instructions (English)	Not used	VRB1459	Not used	Not used	VRB1458
	20	WEEE Label	VRW2231	VRW2231	Not used	VRW2231	VRW2231
	21	Remote Control	VXX3221	VXX3221	Not used	VXX3245	VXX3245
	22	Battery Cover	VZN1015	VZN1015	Not used	VZN1005	VZN1005
	23	Top Cover	VZN1016	VZN1016	Not used	VZN1020	VZN1020
	24	Sheet	Not used	Not used	Not used	VHL1117	VHL1117
	26	Nonwoven Cloth Cover	VHL1116	VHL1116	VHL1116	Not used	Not used

(3) CONTRAST TABLE

DVR-LX60D/WYXK5, DVR-LX60D/YXKRE5 and DVR-550HX-S/YXKRE5 are constructed the same except for the following:

Mark	No.	Symbol and Description	DVR-LX60D/ WYXK5	DVR-LX60D/ YXKRE5	DVR-550HX-S/ YXKRE5
	27	Operating Instructions (Russian)	Not used	MAN-DVR-LX60D-RU	MAN-DVR550HX-RU

9.2 EXTERIOR SECTION



(1) EXTERIOR SECTION PARTS LIST

Mark	No.	Description	Part No.
	1	SERVICE TUSB Assy	VXX3229
	2	SERVICE DVUB Assy	See Contrast table (2)
	3	SERVICE FRJB Assy	VXX3227
	4	DTVD Assy	VWV2303
⚠	5	POWER SUPPLY Assy	VWR1405
	6	HDD	See Contrast table (2)
	7	DC Fan Motor 60	VXM1125
	8	Connector Assy	PF13PP-S17
	9	Eath Plate TU	VBK1173
	10	Flexible Cable 40P	VDA2159
	11	Flexible Cable 11P	VDA2162
	12	Flexible Cable 17P	VDA2163
	13	Flexible Cable 28P	VDA2164
	14	Flexible Cable 24P	VDA2168
	15	SATA Cable	VDX1016
	16	Rubber Foot	VEB1349
	17	Rubber Spacer	VEB1378
	18	Cushion	VEB1401
	19	Rubber Spacer	VEB1398
	20	Gasket 30x10T	VEC2522
	21	Tray Sheet	VEC2551
	22	Barrier	See Contrast table (2)
	23	Housing Assy 4P	VKP2389
	24	Housing Assy 6P	VKP2390
	25	Housing Assy 10P	See Contrast table (2)
	26	Housing Assy 12P	PF12PP-S07
	27	Rear Panel	See Contrast table (2)
NSP	28	Base Chassis	VNB1057
NSP	29	Writer Stay L	VNE2448
NSP	30	Writer Stay R	VNE2449
NSP	31	HDD Stay	VNE2450
	32	DV Angle	VNE2453
	33	Cord Holder	VNL1971
	34	Insulator	See Contrast table (2)
	35	Tray Panel	VXA2866
	36	Bonnet Case S	See Contrast table (2)
NSP	37	Binder (BK-1)	ZCA-BK1
	38	PCB Support	AEC1215
	39	Screw	AMZ30P060FTC
	40	Screw	BPZ30P080FTC
	41	Screw	BSR30P060FTC
	42	Screw	BSR30P080FTB
	43	Screw	BSZ30P040FTC
	44	Screw	See Contrast table (2)
	45	Screw #6-32	DBA1125
	46	Screw	PBZ30P080FTC
	47	Screw	VBA1088
	48	Screw	See Contrast table (2)
NSP	49	Serial Label S	VRW2017
	50	Laser Caution Label	VRW2262
NSP	51	ID Label Assy	VXW1015
NSP	52	Tape	ZTA-3800A-12
	53	Screw Guard	VEB1399
	54	Spacer Cushion	VEB1400
	55	Insulator Sheet	See Contrast table (2)
NSP	56	Service Loader Main	VXU1010
	57	Aluminium Tape 8x50	VEF1067
NSP	58	Serial Label S	VRW2188
	59	Jumper Connector	See Contrast table (2)

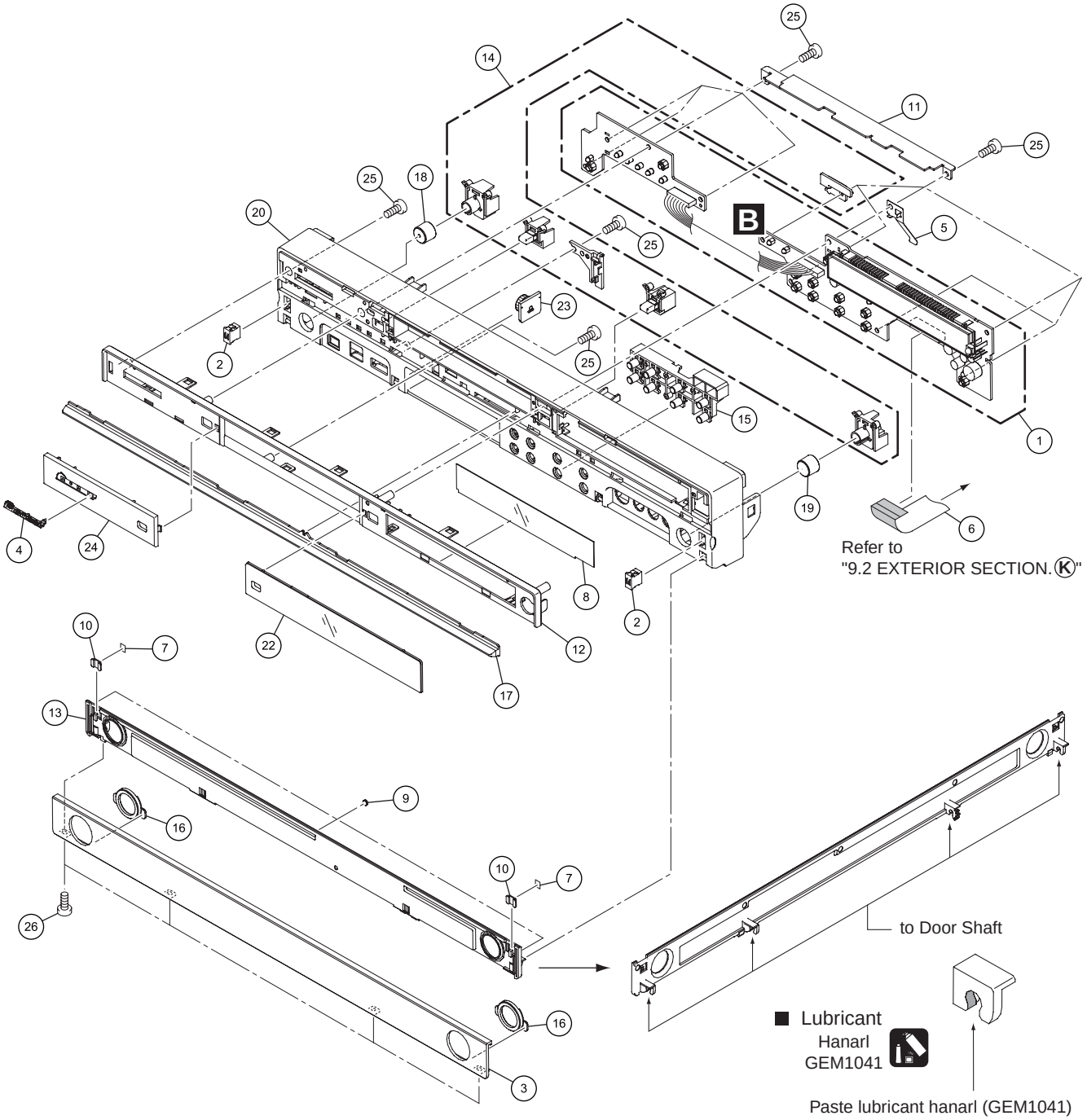
(2) CONTRAST TABLE

DVR-LX60D/WYXK5, DVR-LX60D/WVXK5, DVR-LX60D-AV/WYXK5, DVR-550HX-S/WYXK5 and DVR-550HX-S/WVXK5 are constructed the same except for the following :

Mark	No.	Symbol and Description	DVR-LX60D/ WYXK5	DVR-LX60D/ WVXK5	DVR-LX60D-AV/ WYXK5	DVR-550HX-S/ WYXK5	DVR-550HX-S/ WVXK5
	2	SERVICE DVUB Assy	VXX3231	VXX3231	VXX3231	VXX3232	VXX3232
	6	HDD	VXF1131	VXF1131	VXF1131	VXF1137	VXF1137
	22	Barrier	VEC2548	VEC2548	VEC2548	Not used	Not used
	25	Housing Assy 10P	VKP2391	VKP2391	VKP2391	Not used	Not used
	27	Rear Panel	VNA3005	VNA3005	VNA3002	VNA3020	VNA3020
	34	Insulator	VNK6208	VNK6208	VNK6208	Not used	Not used
	36	Bonnet Case S	VXX3243	VXX3243	VXX3243	VXX3238	VXX3238
	44	Screw	BSZ30P060FBN	BSZ30P060FBN	BSZ30P060FBN	BSZ30P040FTC	BSZ30P040FTC
	48	Screw	VBA1112	VBA1112	VBA1112	BSZ30P040FTC	BSZ30P040FTC
	55	Insulator Sheet	VEC2572	VEC2572	VEC2572	Not used	Not used
	59	Jumper Connector	Not used	Not used	Not used	VKX1021	VKX1021

9.3 FRONT PANEL SECTION

9.3.1 For DVR-LX60D and DVR-LX60D-AV



(1) FRONT PANEL SECTION PARTS LIST

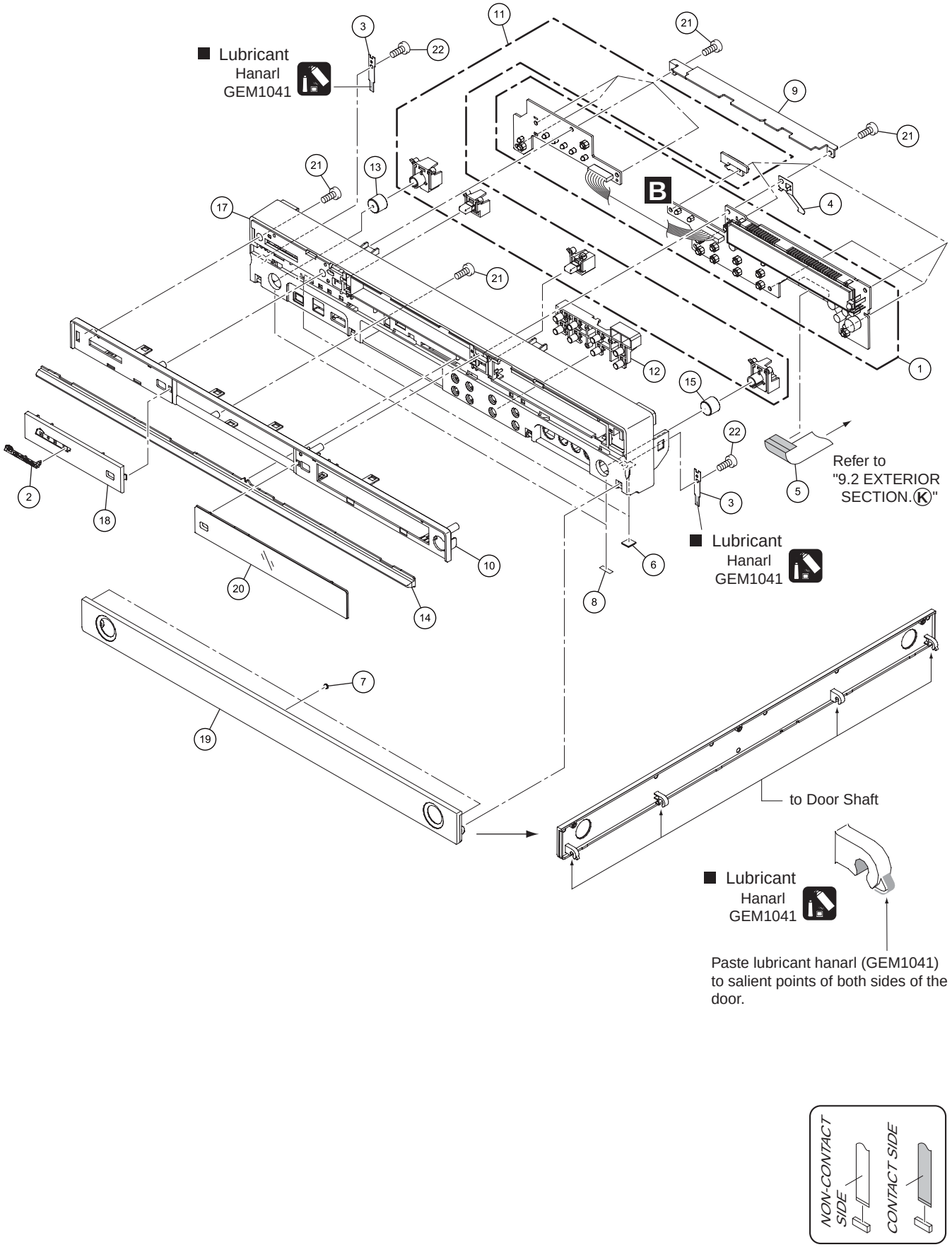
Mark	No.	Description	Part No.
	1	SERVICE FLKY Assy	VXX3260
	2	Magnet Holder Assy	AEC1077
	3	Door Panel	VAH1436
	4	PIONEER Badge	VAM1158
	5	Earth Plate FLKY	VBK1176
	6	Flexible Cable 17P	VDA2163
	7	Black Spacer	VEC2491
	8	FL Filter	VEC2544
	9	Door Pad	VEC2562
	10	Magnet Catcher	VNE2388
	11	FP Bridge	VNE2464
	12	Panel Frame	VNK6149
	13	Door Base	VNK6161
	14	Main Key	VNK6162
	15	Function Key	VNK6164
	16	Door Ring	VNK6165
	17	Center Lens	VNK6230
	18	Key Top PW	VNK6181
	19	Key Top REC	VNK6183
	20	Front Panel	See Contrast table (2)
	21	• • • • •	
	22	FL Lens	VNK6253
	23	Damper Assy	VXA2858
	24	Sub Panel	VXA2869
	25	Screw	BPZ30P080FTC
	26	Flat Head Screw	VBA1113

(2) CONTRAST TABLE

DVR-LX60D/WYXK5, DVR-LX60D/WVXK5 and DVR-LX60D-AV/WYXK5 are constructed the same except for the following :

Mark	No.	Symbol and Description	DVR-LX60D/ WYXK5	DVR-LX60D/ WVXK5	DVR-LX60D-AV/ WYXK5
	20	Front Panel	VNK6223	VNK6233	VNK6223

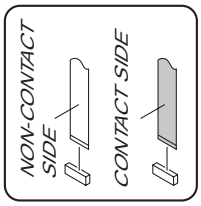
9.3.2 For DVR-550HX-S



(1) FRONT PANEL SECTION PARTS LIST

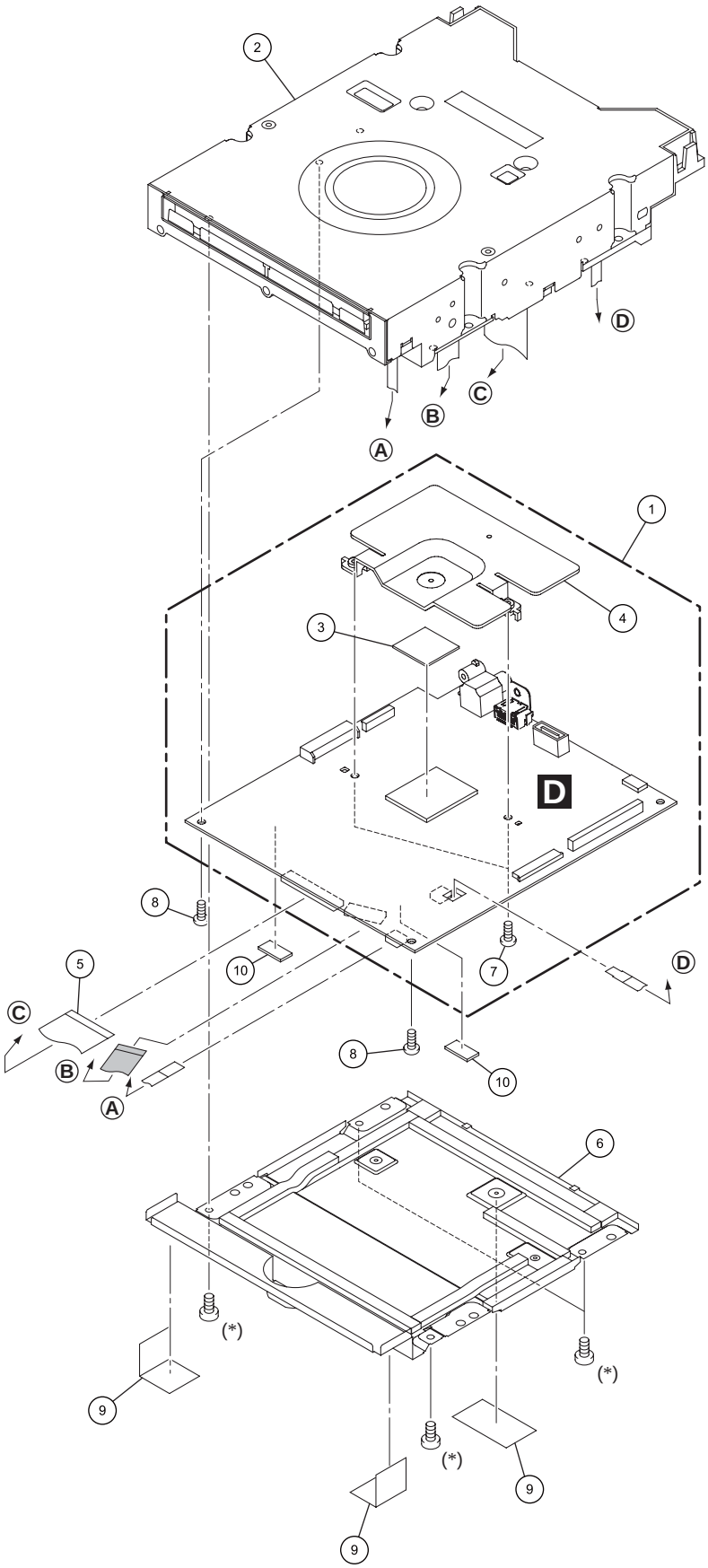
Mark	No.	Description	Part No.
	1	SERVICE FLKY Assy	VXX3228
	2	PIONEER Badge	VAM1148
	3	Door Spring	VBK1175
	4	Earth Plate FLKY	VBK1176
	5	Flexible Cable 17P	VDA2163
	6	Rubber Foot	VEB1349
	7	Rubber Sheet	VEB1396
	8	Door Cushion	VEC2561
	9	FP Bridge	VNE2464
	10	Panel Frame	VNK6149
	11	Main Key	VNK6162
	12	Function Key	VNK6163
	13	Key Top PW	VNK6166
	14	Center Lens	VNK6230
	15	Key Top REC	VNK6182
	16	• • • • •	
	17	Front Panel	VNK6221
	18	Sub Panel	VXA2869
	19	Door (for WYXK5)	VXA2873
	19	Door (for WVXK5)	VXA2874
	20	FL Lens	VXA2870
	21	Screw	BPZ30P080FTC
	22	Flat Head Screw	VBA1113

9.4 SERVICE LOADER MAIN SECTION



Reuse (*) marked parts when exachanging Service LOADER Assy.

- Case Screw S (DBA1250) x2



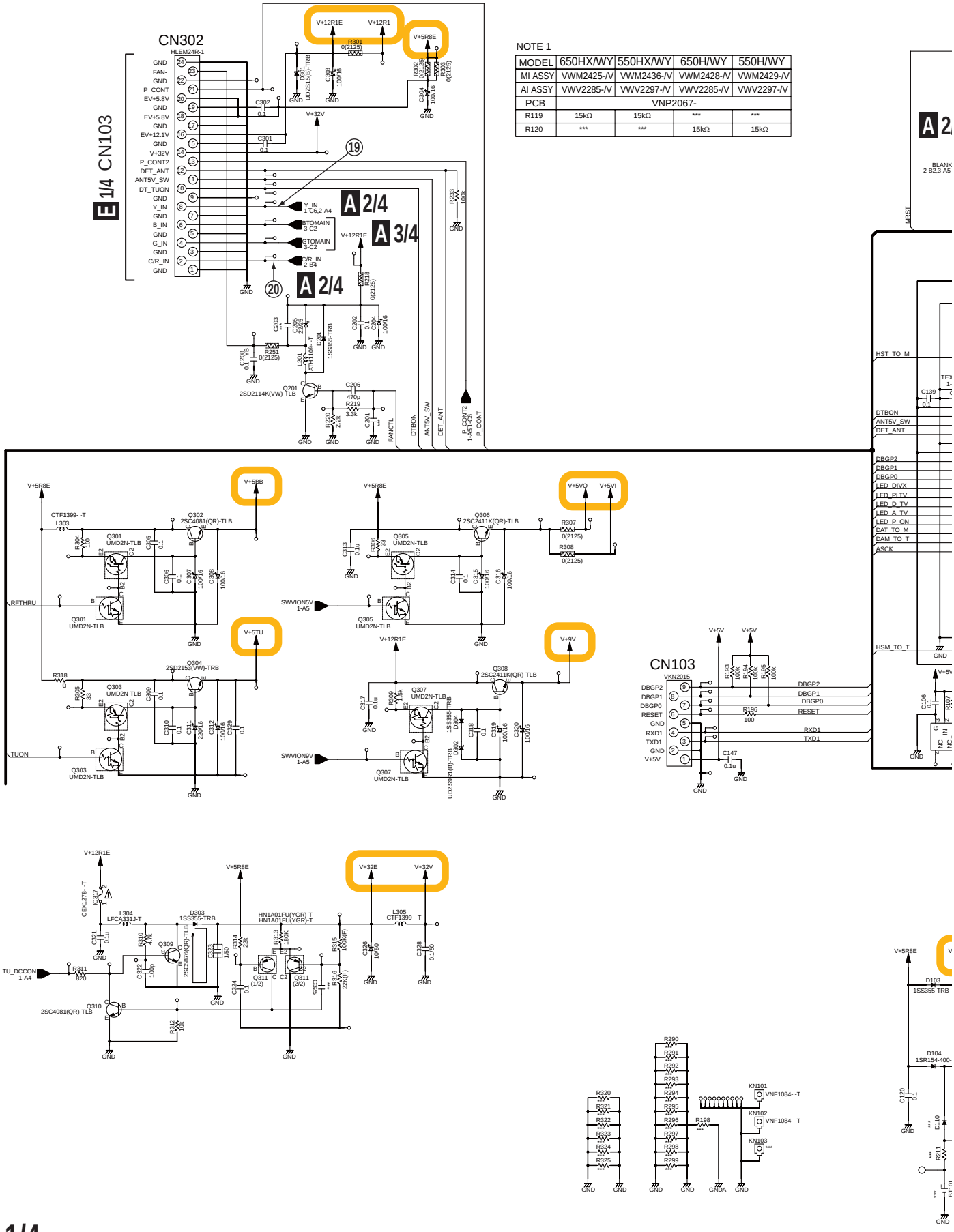
SERVICE LOADER MAIN SECTION PARTS LIST

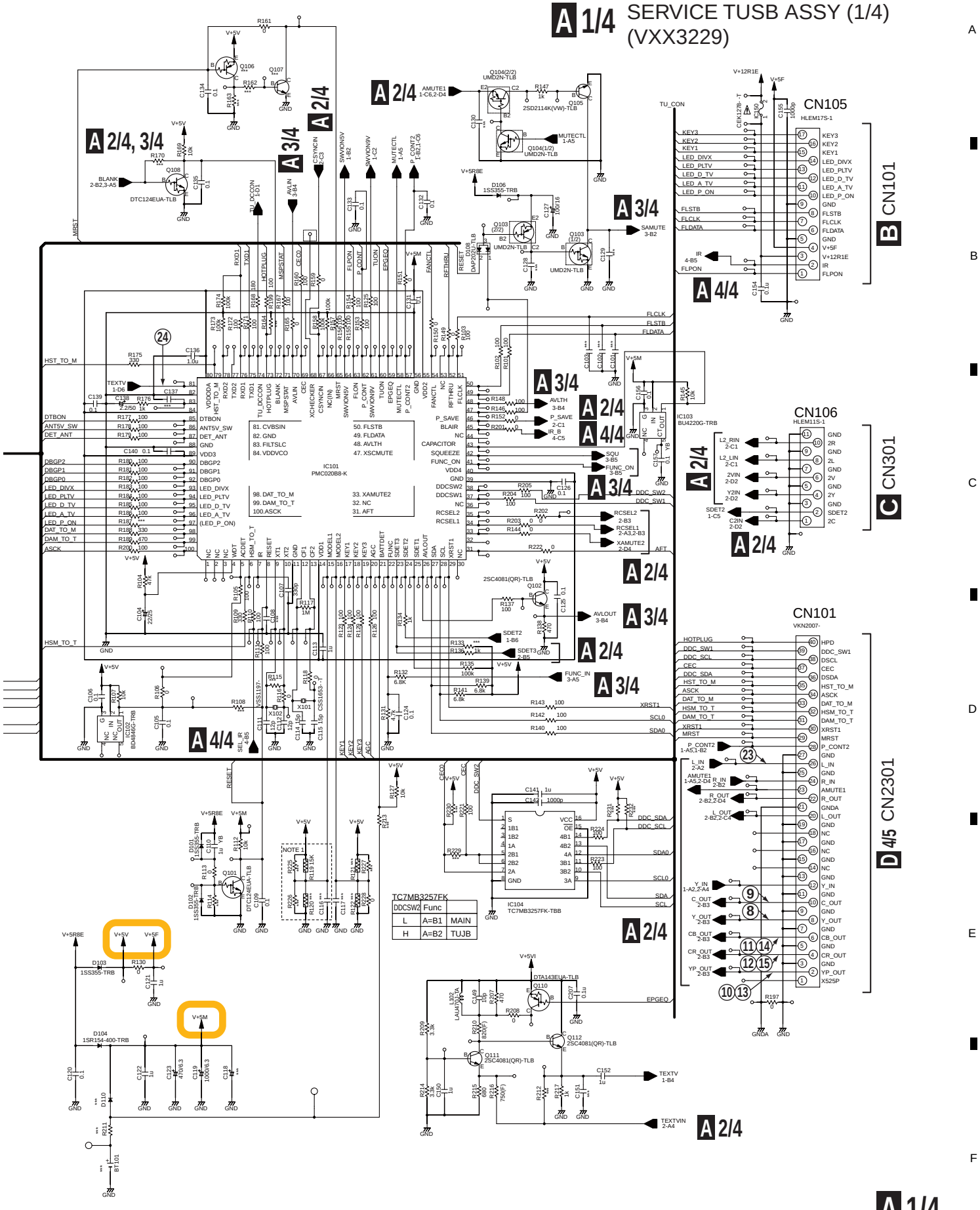
Mark	No.	Description	Part No.
	1	SERVICE MAIN Assy	VXX3241
	2	Service Loader Assy	VXX3239
	3	Radiation Sheet (Silicon)	VEB1360
	4	Heatsink	VNH1079
	5	FFC U11	DDX1208
	6	Low Case U11	DNC1761
	7	Screw	BBZ30P060FTC
	8	Screw	DBA1220
NSP	9	Tape	• • • • •
	10	Silicon Sheet R9B	DEB1726

10. SCHEMATIC DIAGRAM
10.1 SERVICE TUSB ASSY (1/4)

NOTE 1

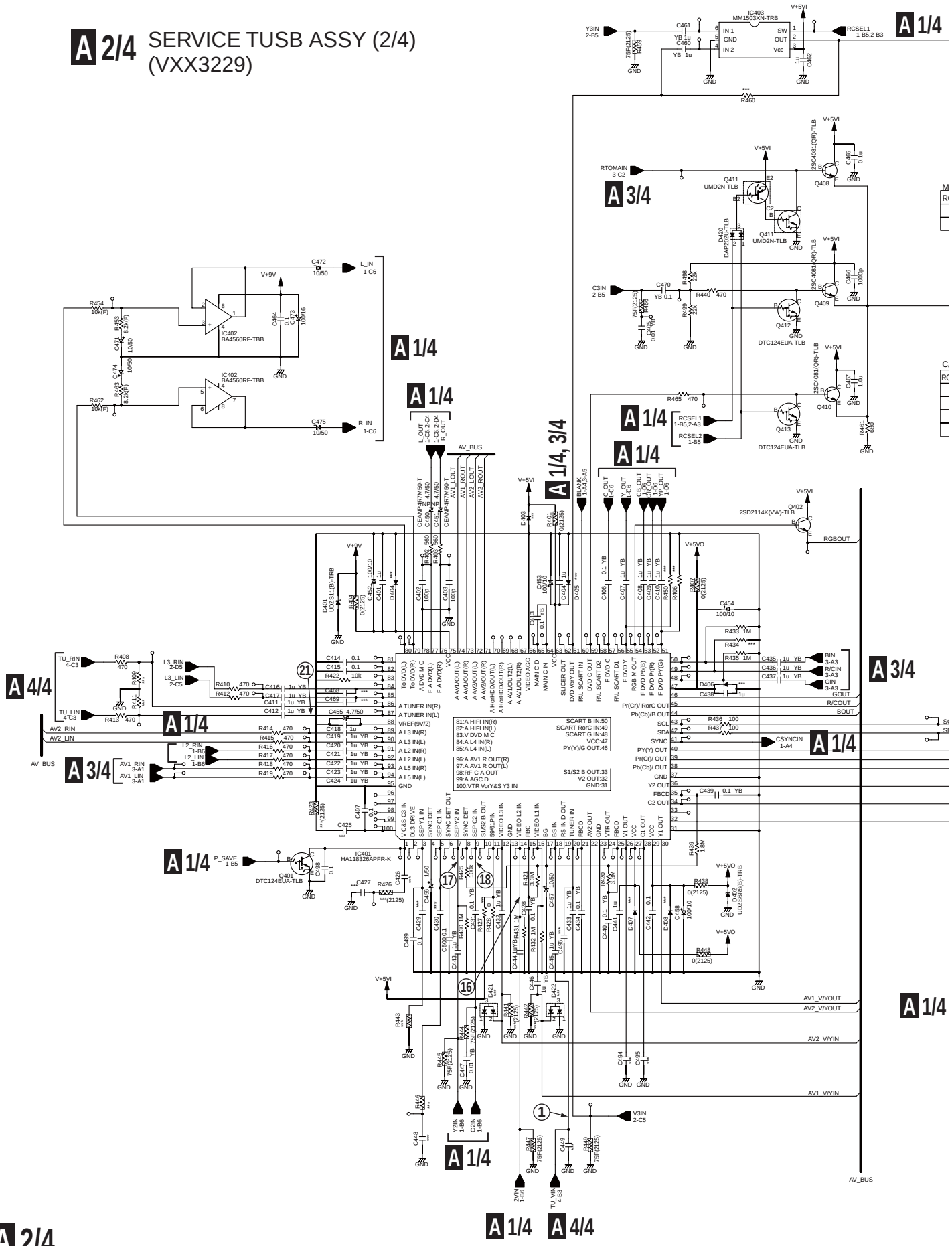
MODEL	650HX/WY	550HX/WY	650H/WY	550H/WY
MI ASSY	VWM2425-/V	VWM2436-/V	VWM2428-/V	VWM2429-/V
AI ASSY	VWV2285-/V	VWV2297-/V	VWV2285-/V	VWV2297-/V
PCB	VNP2067-			
R119	15kΩ	15kΩ	***	***
R120	***	***	15kΩ	15kΩ

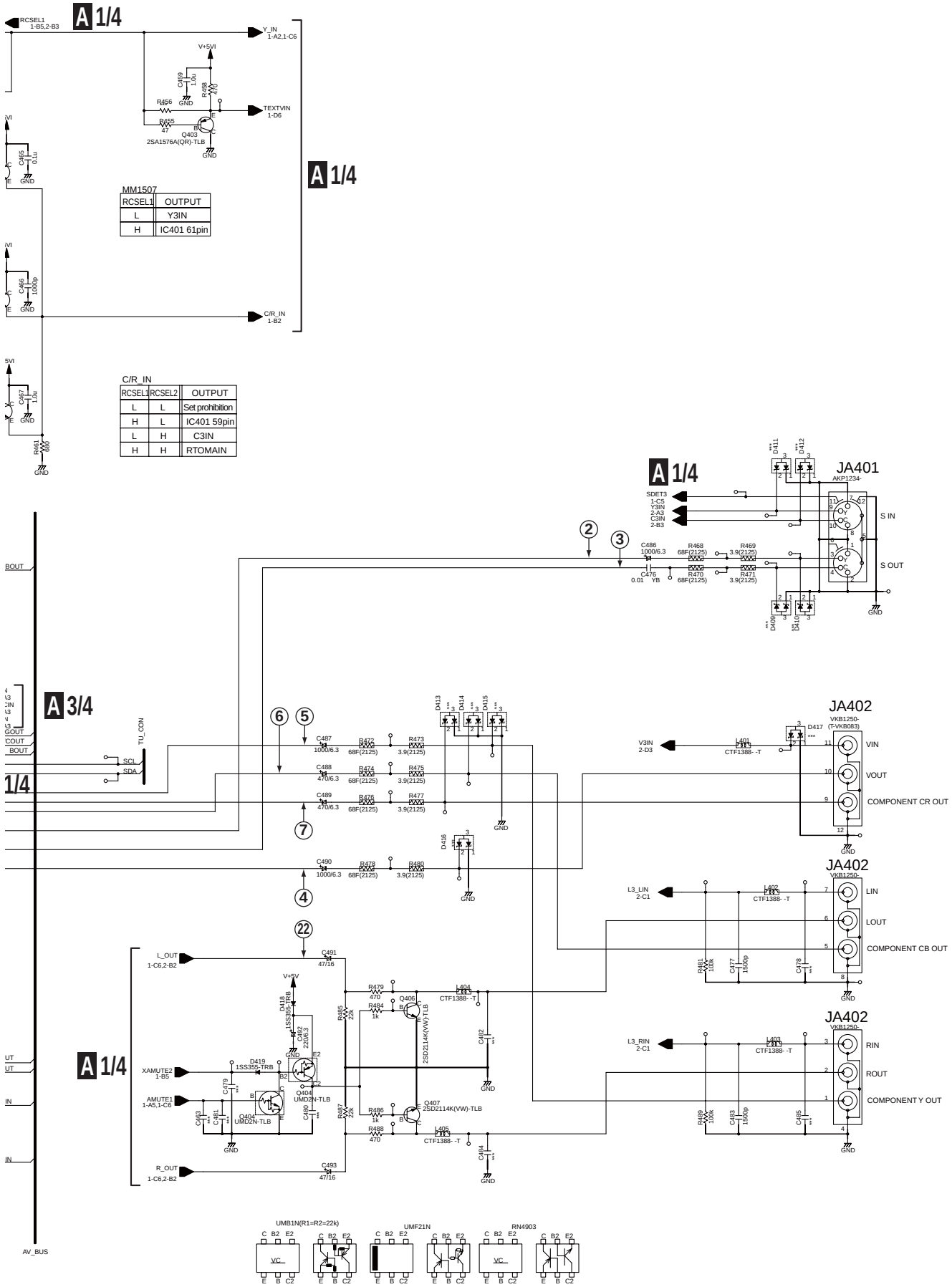



A 2/4, 3/4
A 2/4
A 3/4
A 4/4
CN105
HLEM17S-1
B CN101
CN106
HLEM11S-1
C CN301
CN101
VKN2007-
D 4/5 CN2301
IC101
PMC020B8-K
IC103
BU4220G-TRB
IC104
TC7MB3257FK-TBB
TC7MB3257FK
DDCSW2 Func
L A=B1 MAIN
H A=B2 TUJB
DTC124EUA-TLB
2SC4081(QR)-TLB
UMD2N-TLB
2SD2114K(VW)-TLB
DTA143EUA-TLB
1SS355-TRB
1SR154-400-TRB
DAP202K-TLB
BD4846G-TRB
IC102
TU_CON
DVR-LX60D
105

10.2 SERVICE TUSB ASSY (2/4)

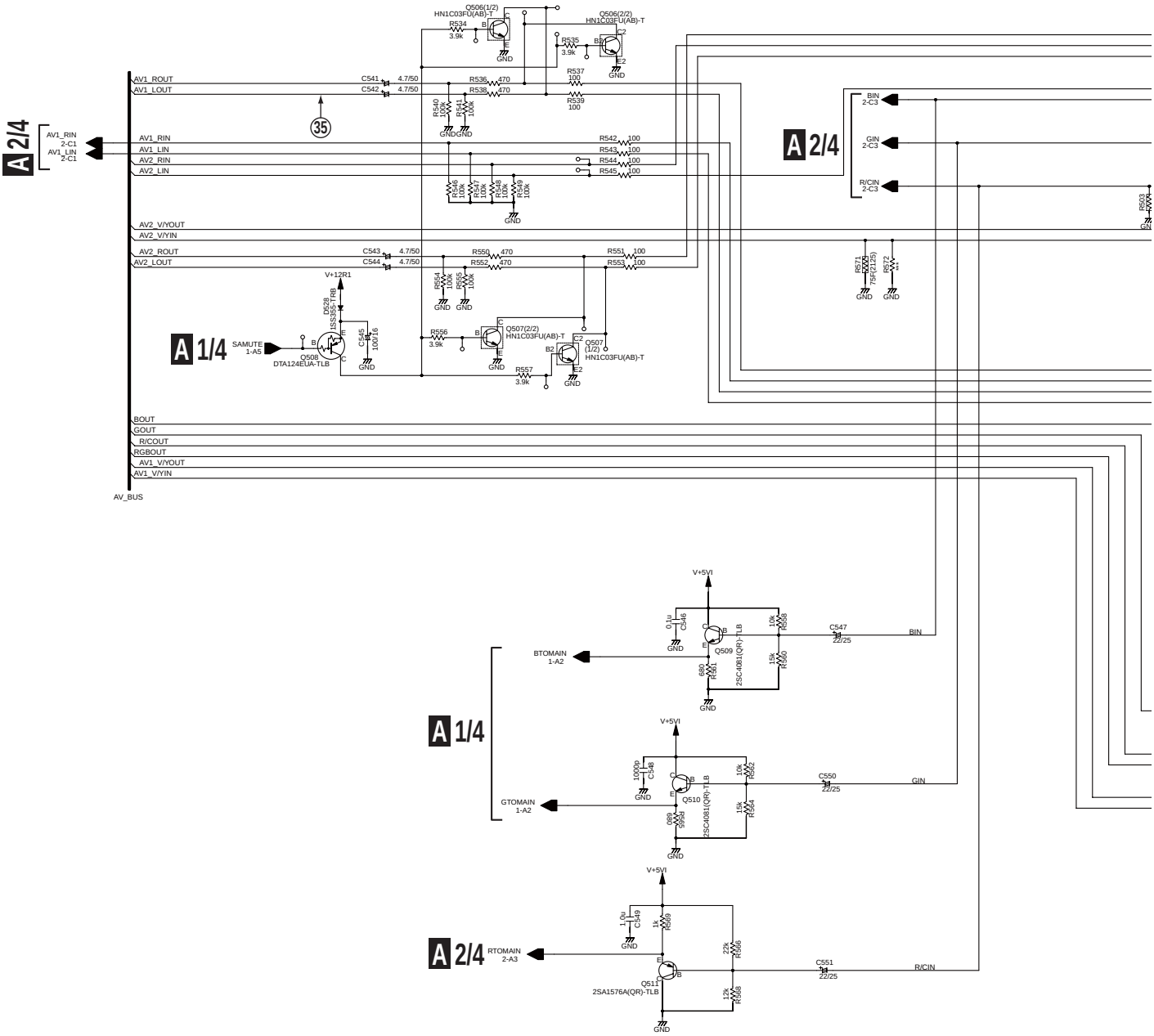
A 2/4 SERVICE TUSB ASSY (2/4)
(VXX3229)

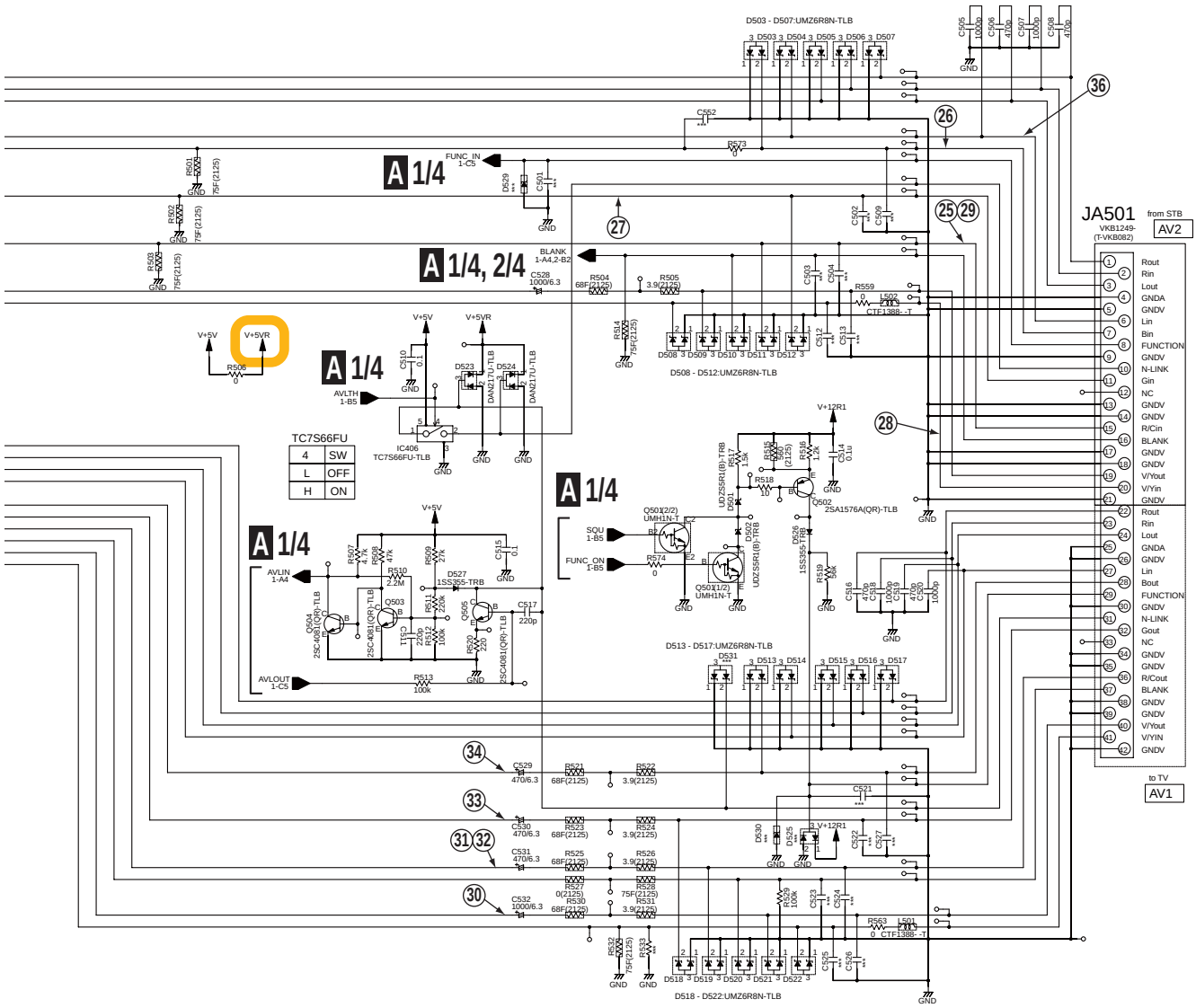



A 1/4
RCSEL1
1-B5,2-B3
Y_IN
1-A2,1-C6
TEXTVIN
1-D6
C/R_IN
1-B2
MM1507
RCSEL1 | OUTPUT
L | Y3IN
H | IC401 61pin
C/R_IN
RCSEL1 RCSEL2 | OUTPUT
L L | Set prohibition
H L | IC401 59pin
L H | C3IN
H H | RTOMAIN
JA401
AKP1234-
S IN
S OUT
JA402
VKB1250-(T-VKB083)
VIN
VOUT
COMPONENT CR OUT
JA402
VKB1250-
LIN
LOUT
COMPONENT CB OUT
JA402
VKB1250-
RIN
ROUT
COMPONENT Y OUT
A 3/4
A 1/4
A 2/4
AV_BUS
TU_CON
SCL
SDA
L_OUT
1-C6,2-B2
R_OUT
1-C6,2-B2
XAMUTE2
1-B5
AMUTE1
1-A5,1-C6
V3IN
2-D3
L3_LIN
2-C1
L3_RIN
2-C1
UMB1N(R1=R2=22k)
UMF21N
RN4903
GND

10.3 SERVICE TUSB ASSY (3/4)

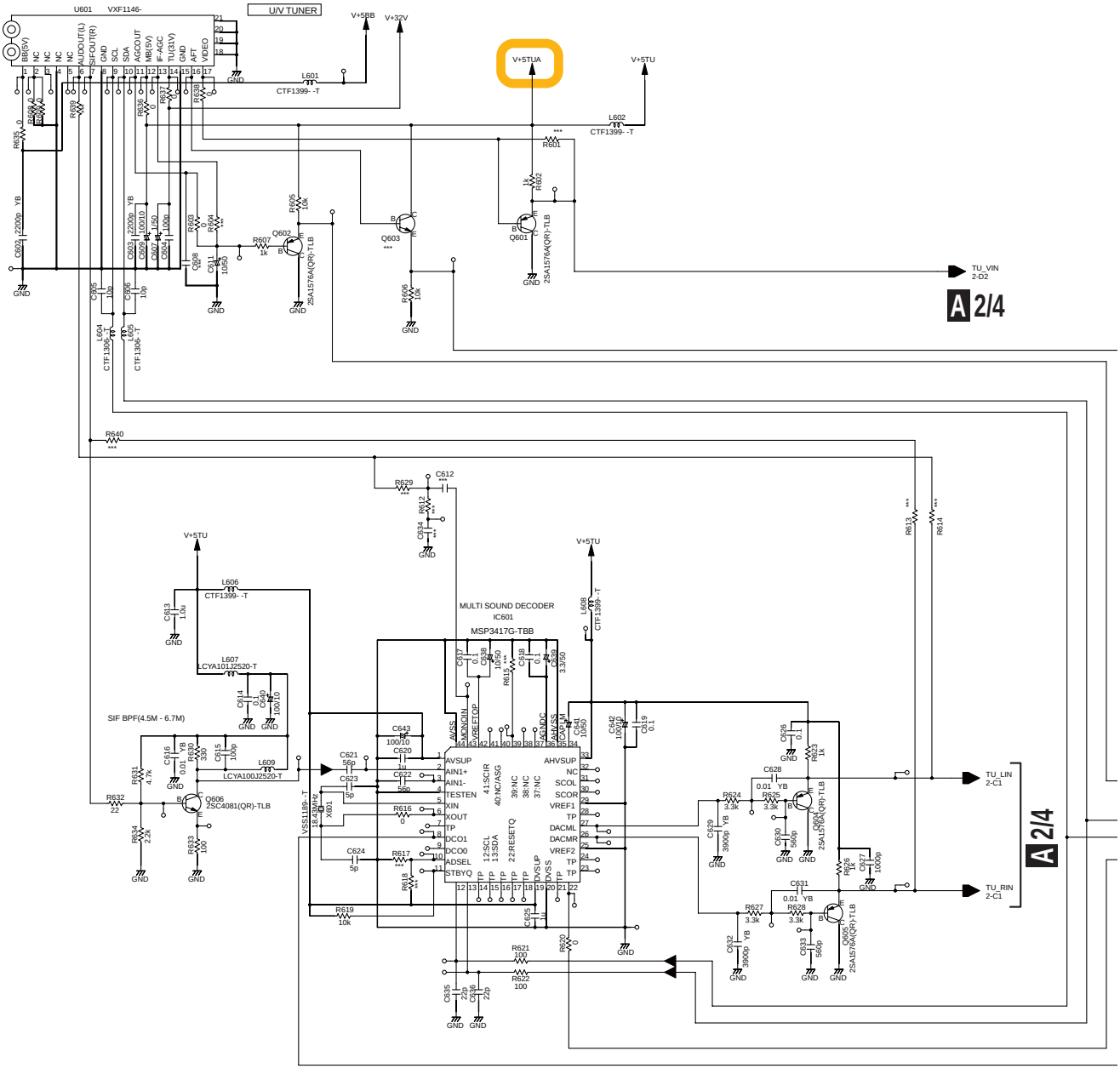
A 3/4 SERVICE TUSB ASSY (3/4) (VXX3229)




JA501
from STB
AV2
to TV
AV1
A 1/4
A 1/4, 2/4
A 3/4
TC7S66FU
4 SW
L OFF
H ON
D503 - D507:UMZ6R8N-TLB
D508 - D512:UMZ6R8N-TLB
D513 - D517:UMZ6R8N-TLB
D518 - D522:UMZ6R8N-TLB

10.4 SERVICE TUSB ASSY (4/4)

A 4/4 SERVICE TUSB ASSY (4/4) (VXX3229)



A

B

C

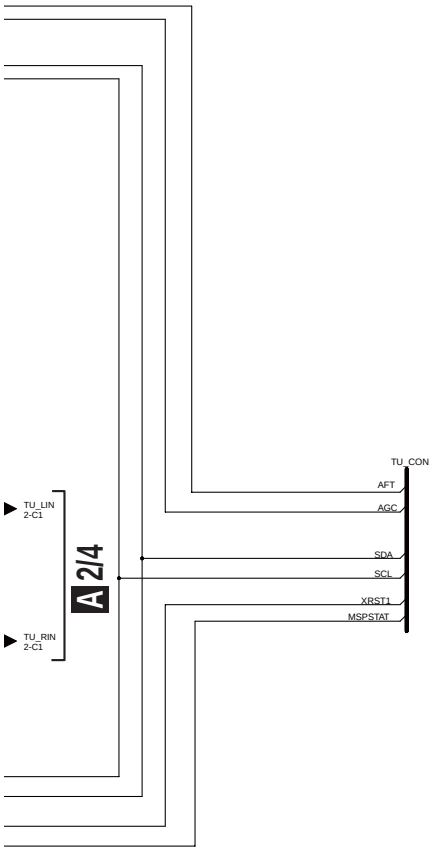
D

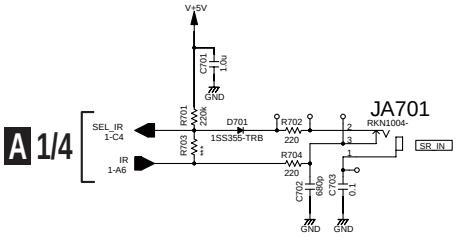
E

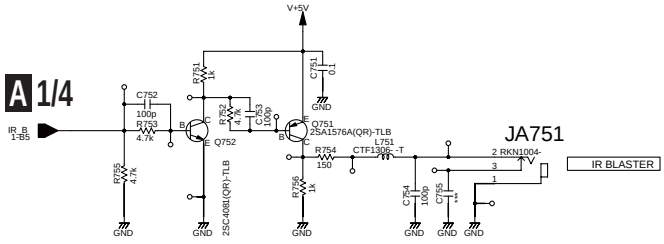
F

TU_VIN
2-D2

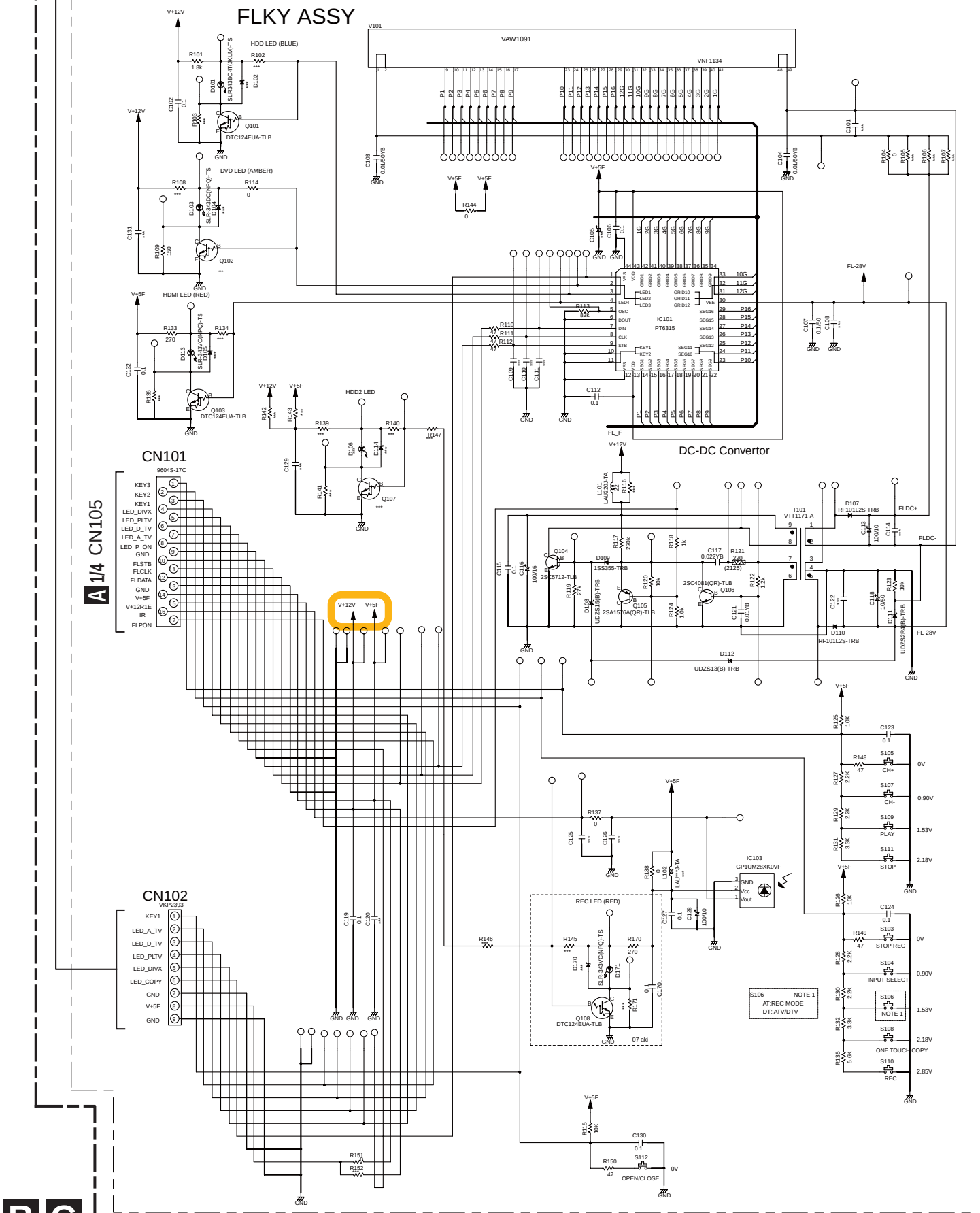
2/4





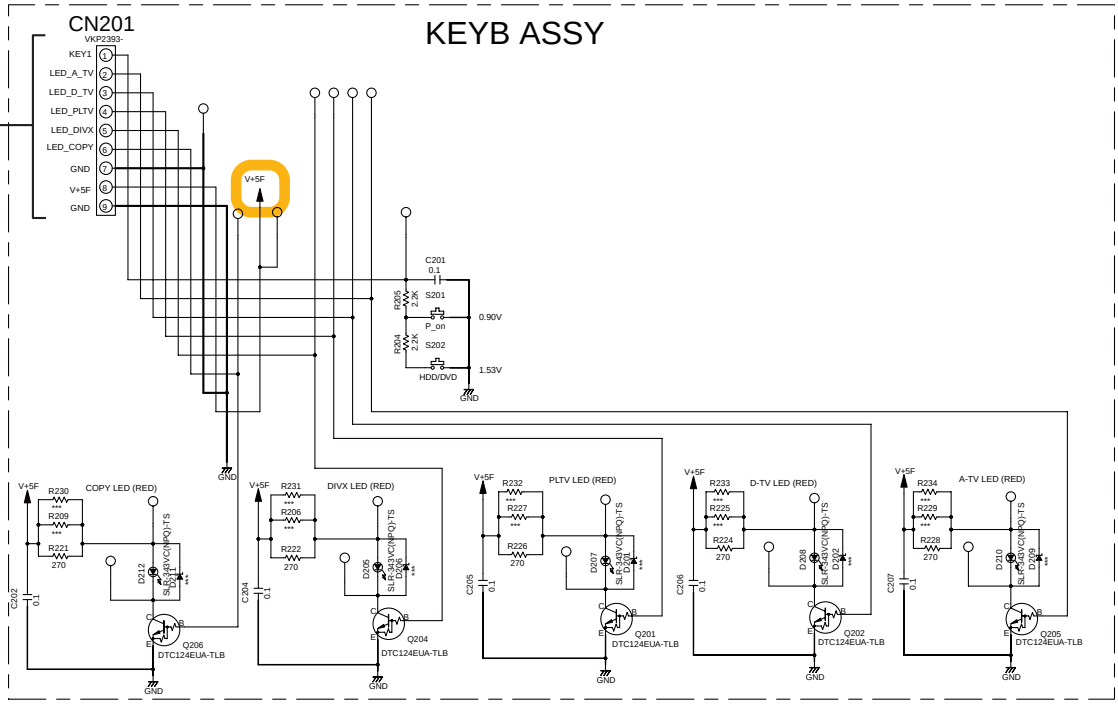


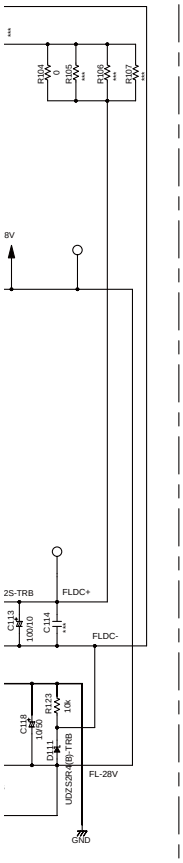
A 4/4


FLKY ASSY
CN101
9604S-17C
KEY3
KEY2
KEY1
LED_DIVX
LED_PLTV
LED_D_TV
LED_A_TV
LED_P_ON
GND
FLSTB
FLCLK
FLDATA
GND
V+5F
V+12R1E
IR
FLPON
A 1/4 CN105
CN102
VKP2393-
KEY1
LED_A_TV
LED_D_TV
LED_PLTV
LED_DIVX
LED_COPY
GND
V+5F
GND
HDD LED (BLUE)
DVD LED (AMBER)
HDMI LED (RED)
HDD2 LED
VAW1091
VNF1134-
IC101
PT6315
IC103
GP1UM28XK0VF
REC LED (RED)
DC-DC Convertor
FL-28V
FLDC+
FLDC-
S105 CH+ 0V
S107 CH- 0.90V
S109 PLAY 1.53V
S111 STOP 2.18V
S103 STOP REC 0V
S104 INPUT SELECT 0.90V
S106 NOTE 1 1.53V
S108 ONE TOUCH COPY 2.18V
S110 REC 2.85V
S112 OPEN/CLOSE 0V
S106 NOTE 1
AT:REC MODE
DT: ATV/DTV
07 aki

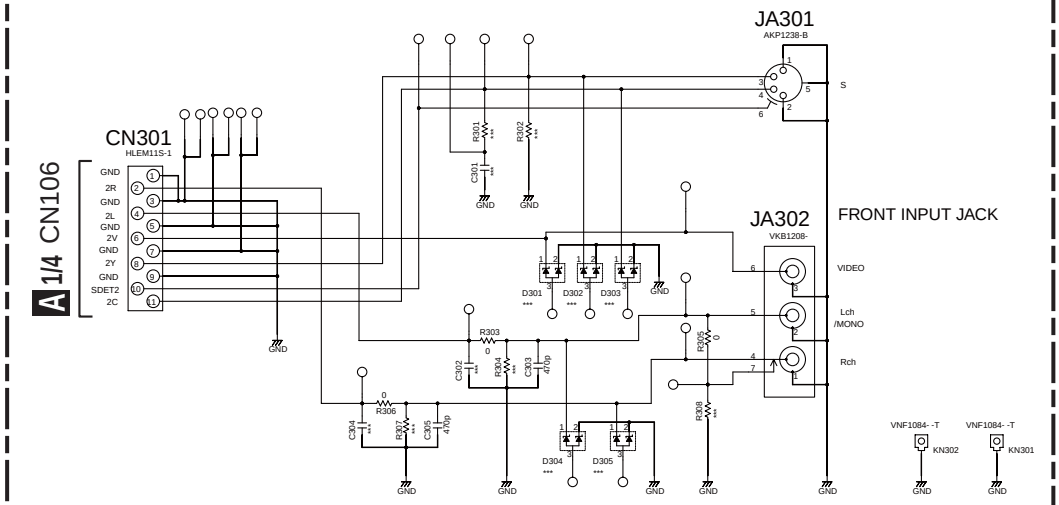
B SERVICE FLKY ASSY
(VXX3260 : DVR-LX60D, DVR-LX60D-AV)
(VXX3228 : DVR-550HX-S)

KEYB ASSY

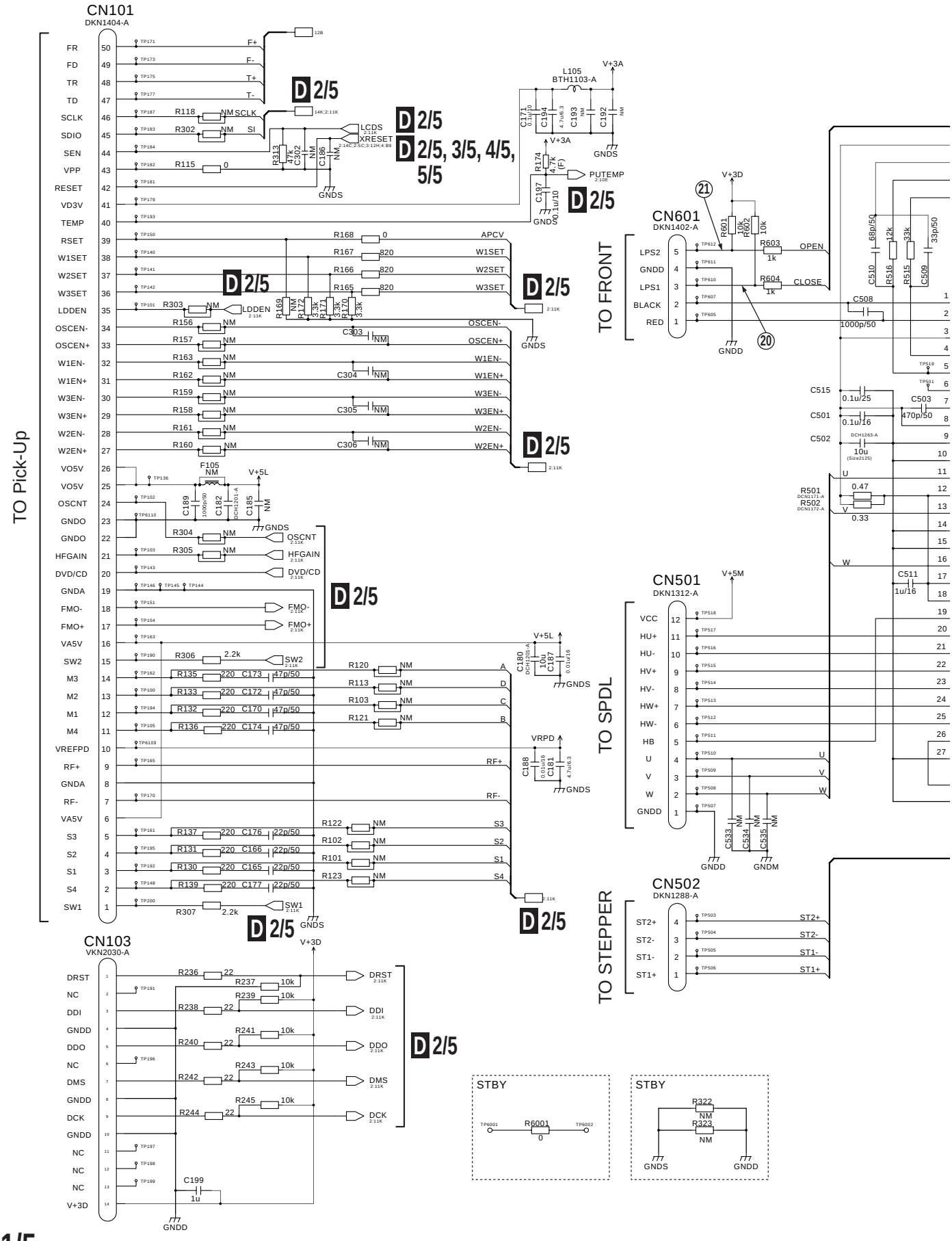


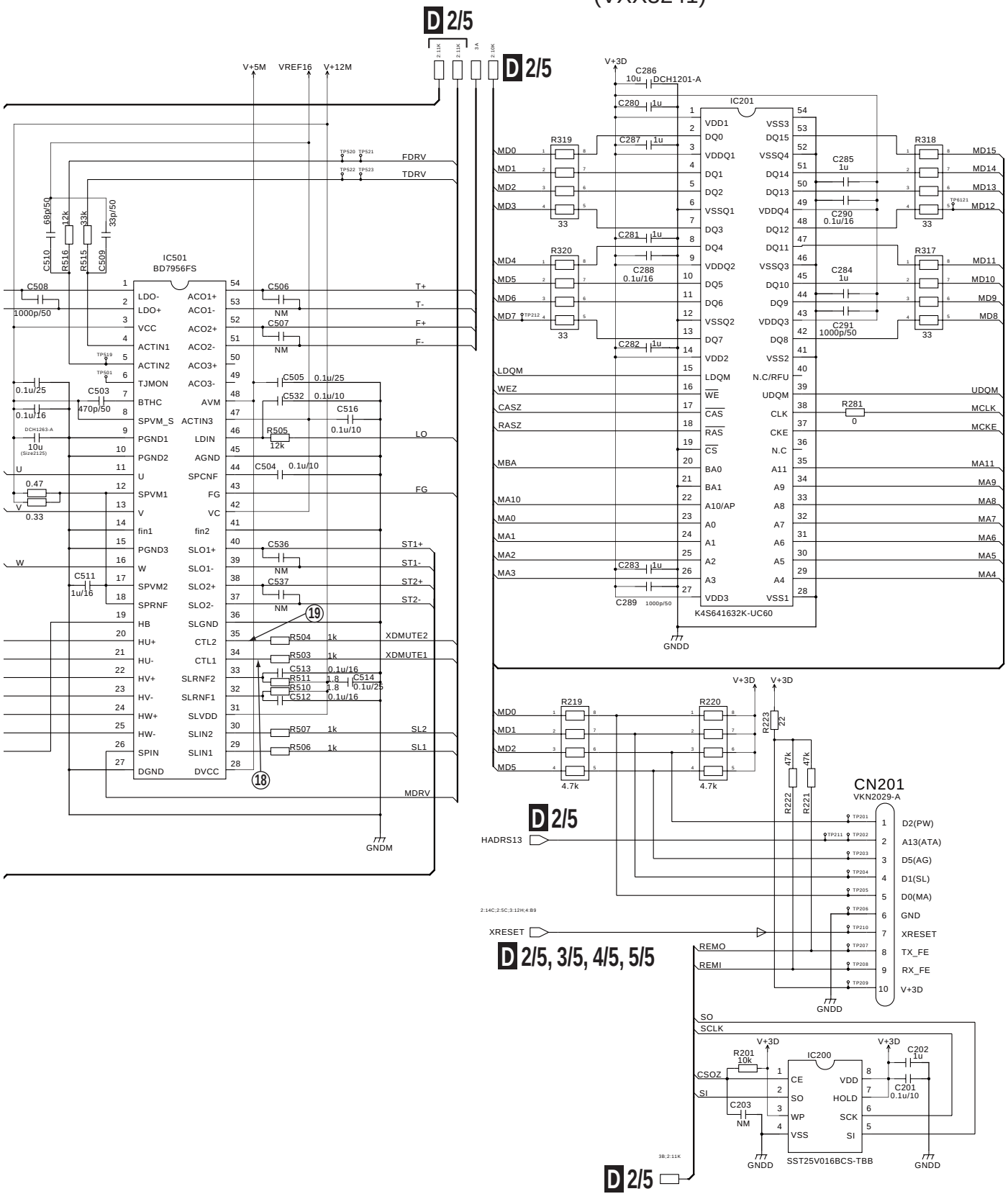


C SERVICE FRJB ASSY
(VXX3227)

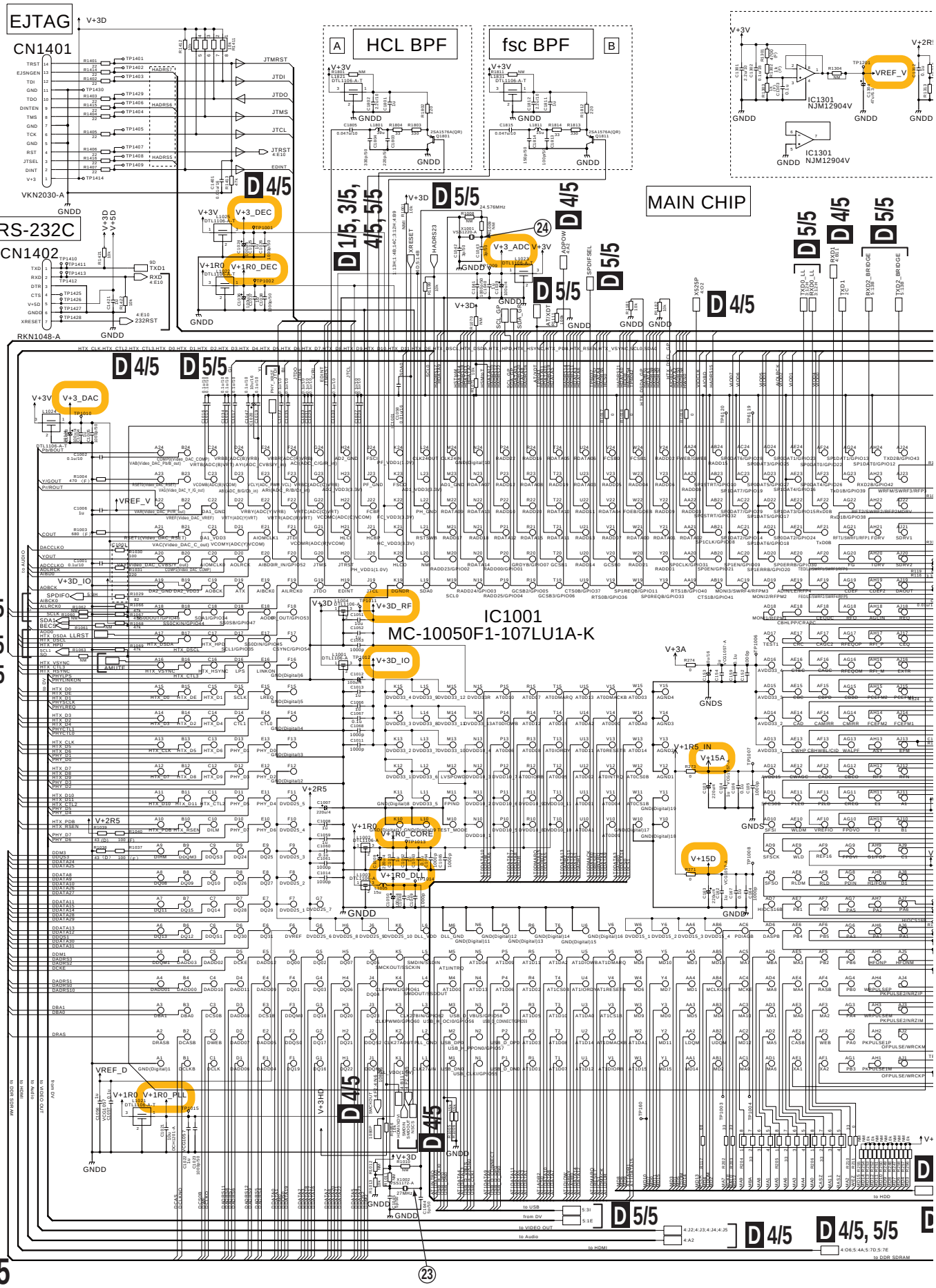


10.6 SERVICE MAIN ASSY (1/5)

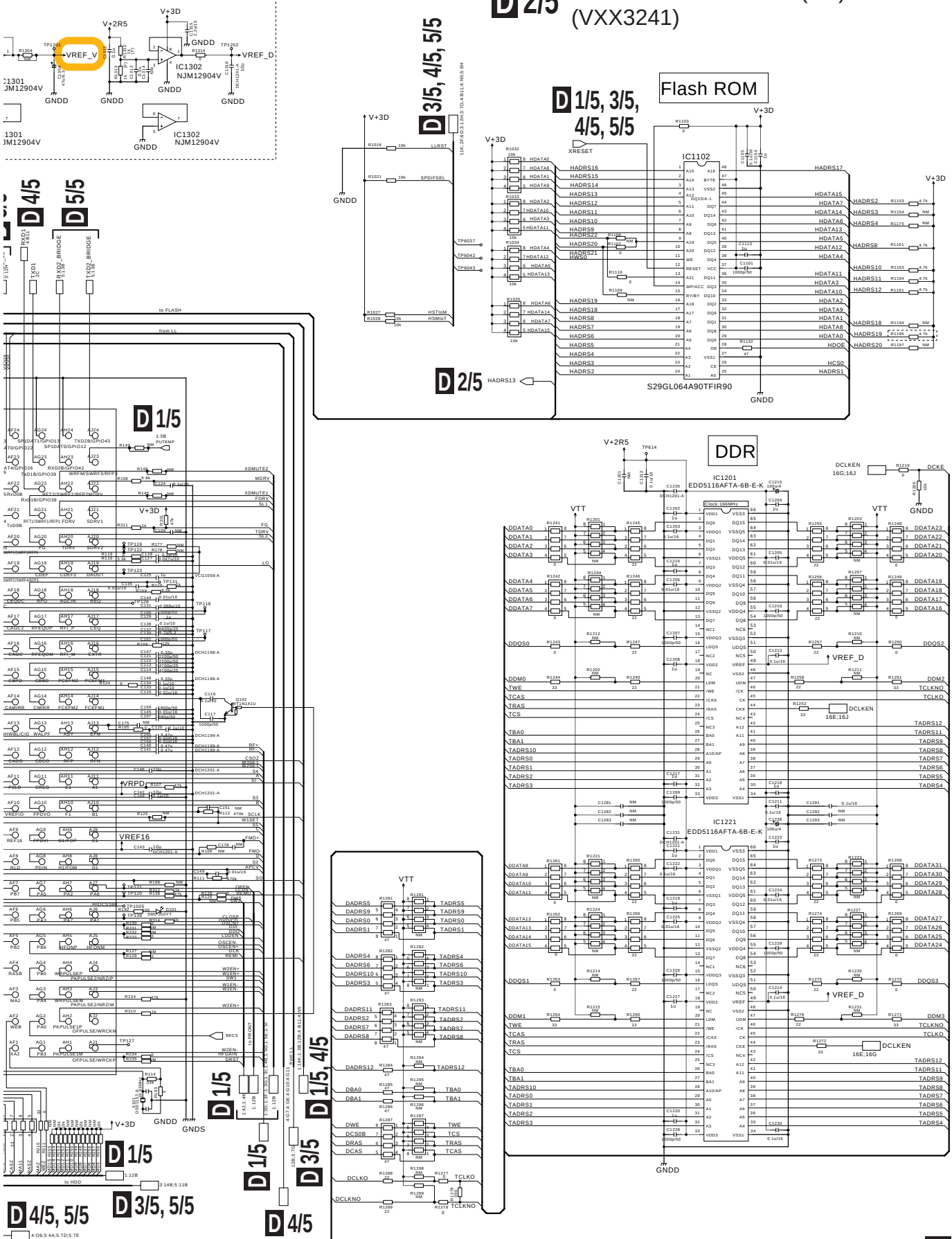



D 2/5
V+5M
VREF16
V+12M
IC501
BD7956FS
LDO-
LDO+
VCC
ACTIN1
ACTIN2
TJMON
BTHC
SPVM_S
PGND1
PGND2
U
SPVM1
V
fin1
PGND3
W
SPVM2
SPRNF
HB
HU+
HU-
HV+
HV-
HW+
HW-
SPIN
DGND
ACO1+
ACO1-
ACO2+
ACO2-
ACO3+
ACO3-
AVM
ACTIN3
LDIN
AGND
SPCNF
FG
VC
fin2
SLO1+
SLO1-
SLO2+
SLO2-
SLGND
CTL2
CTL1
SLRNF2
SLRNF1
SLVDD
SLIN2
SLIN1
DVCC
C508
1000p/50
C510
68p/50
R516
12k
R515
33k
C509
33p/50
C503
470p/50
C511
1u/16
C506
C507
C505
0.1u/25
C532
0.1u/10
C516
0.1u/10
C504
0.1u/10
C536
C537
NM
R505
12k
R504
1k
R503
1k
C513
0.1u/16
R511
1.8
R510
1.8
C512
0.1u/16
C514
0.1u/25
R507
1k
R506
1k
T+
T-
F+
F-
LO
FG
ST1+
ST1-
ST2+
ST2-
XDMUTE2
XDMUTE1
SL2
SL1
MDRV
GNDM
FDRV
TDRV
D 2/5
V+3D
C286
10u
DCH1201-A
C280
1u
C287
1u
C281
1u
C288
0.1u/16
C282
1u
C283
1u
C289
1000p/50
IC201
VDD1
DQ0
VDDQ1
DQ1
DQ2
VSSQ1
DQ3
DQ4
VDDQ2
DQ5
DQ6
VSSQ2
DQ7
VDD2
LDQM
WEZ
CASZ
RASZ
MBA
MA10
MA0
MA1
MA2
MA3
VDD3
VSS3
DQ15
VSSQ4
DQ14
DQ13
VDDQ4
DQ12
DQ11
VSSQ3
DQ10
DQ9
VDDQ3
DQ8
VSS2
N.C/RFU
UDQM
CLK
CKE
N.C
A11
A9
A8
A7
A6
A5
A4
VSS1
K4S641632K-UC60
R319
R320
R318
R317
33
C285
1u
C290
0.1u/16
C284
1u
C291
1000p/50
MD0
MD1
MD2
MD3
MD4
MD5
MD6
MD7
MD15
MD14
MD13
MD12
MD11
MD10
MD9
MD8
R281
0
UDQM
MCLK
MCKE
MA11
MA9
MA8
MA7
MA6
MA5
MA4
GNDD
R219
R220
4.7k
R223
22
47k
R222
R221
CN201
VKN2029-A
D2(PW)
A13(ATA)
D5(AG)
D1(SL)
D0(MA)
GND
XRESET
TX_FE
RX_FE
V+3D
HADRS13
XRESET
D 2/5, 3/5, 4/5, 5/5
REMO
REMI
SO
SCLK
R201
10k
IC200
CE
SO
WP
VSS
VDD
HOLD
SCK
SI
CSOZ
SI
C203
NM
C202
1u
C201
0.1u/10
SST25V016BCS-TBB
D 2/5

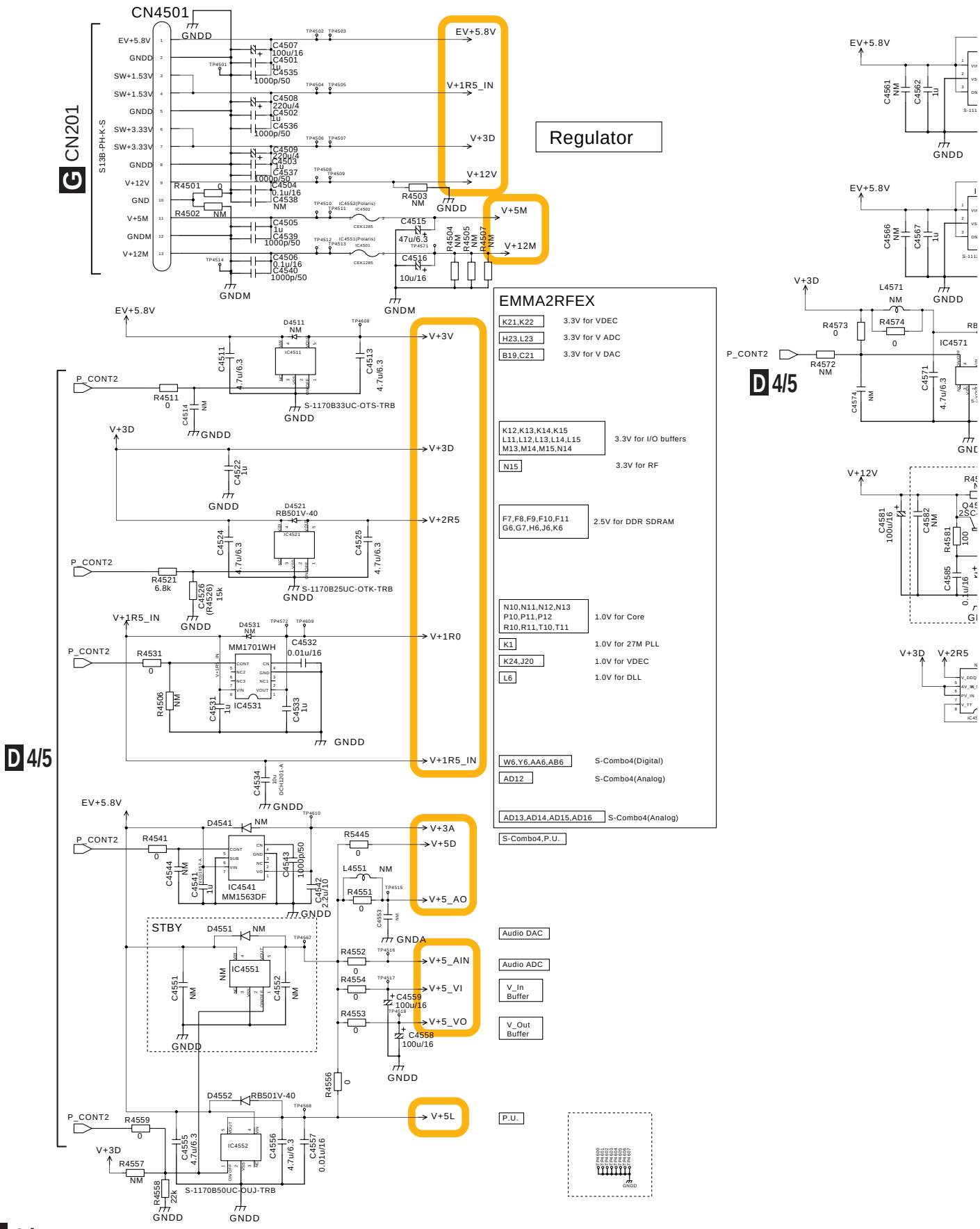
10.7 SERVICE MAIN ASSY (2/5)

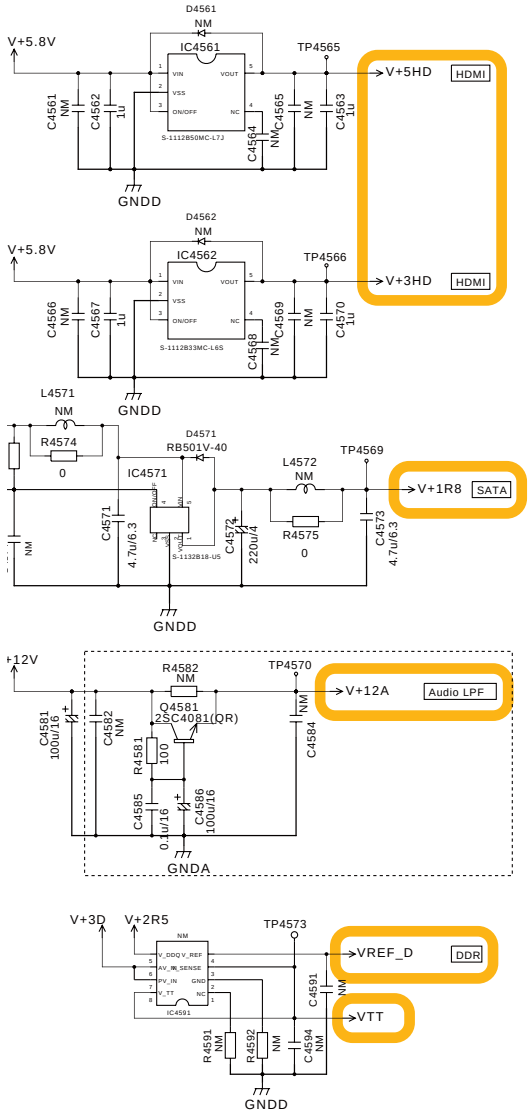


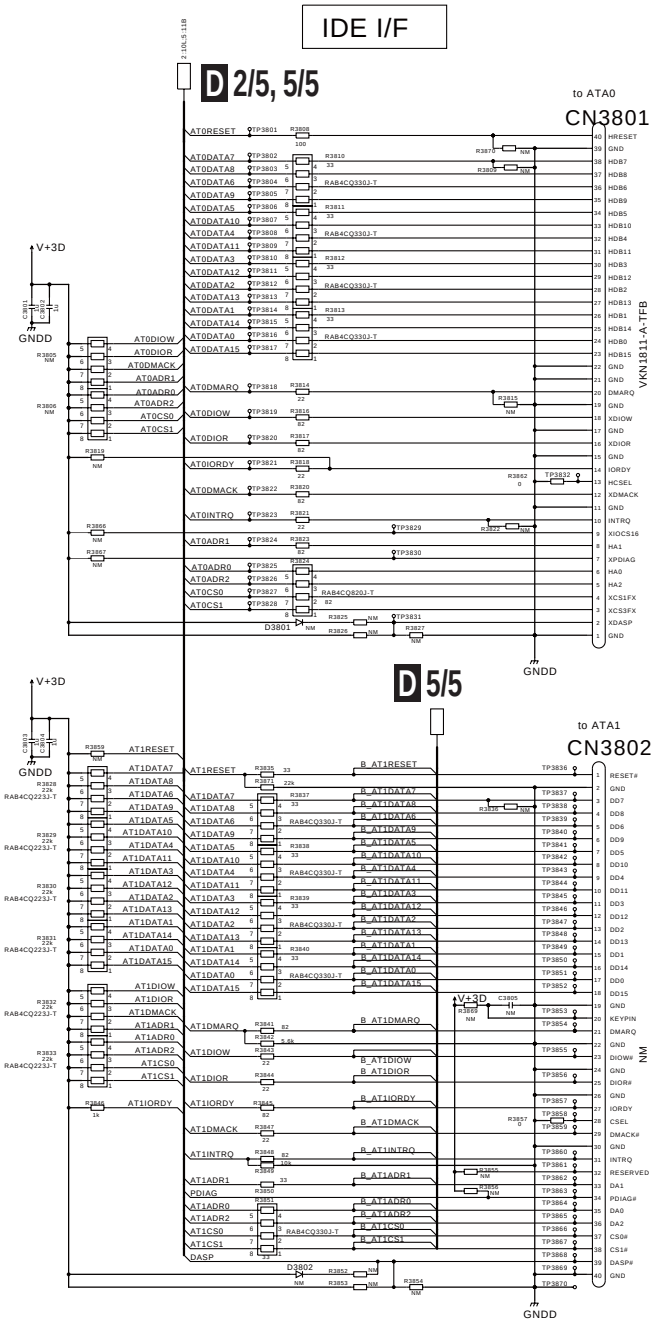
D 2/5 SERVICE MAIN ASSY (2/5) (VXX3241)



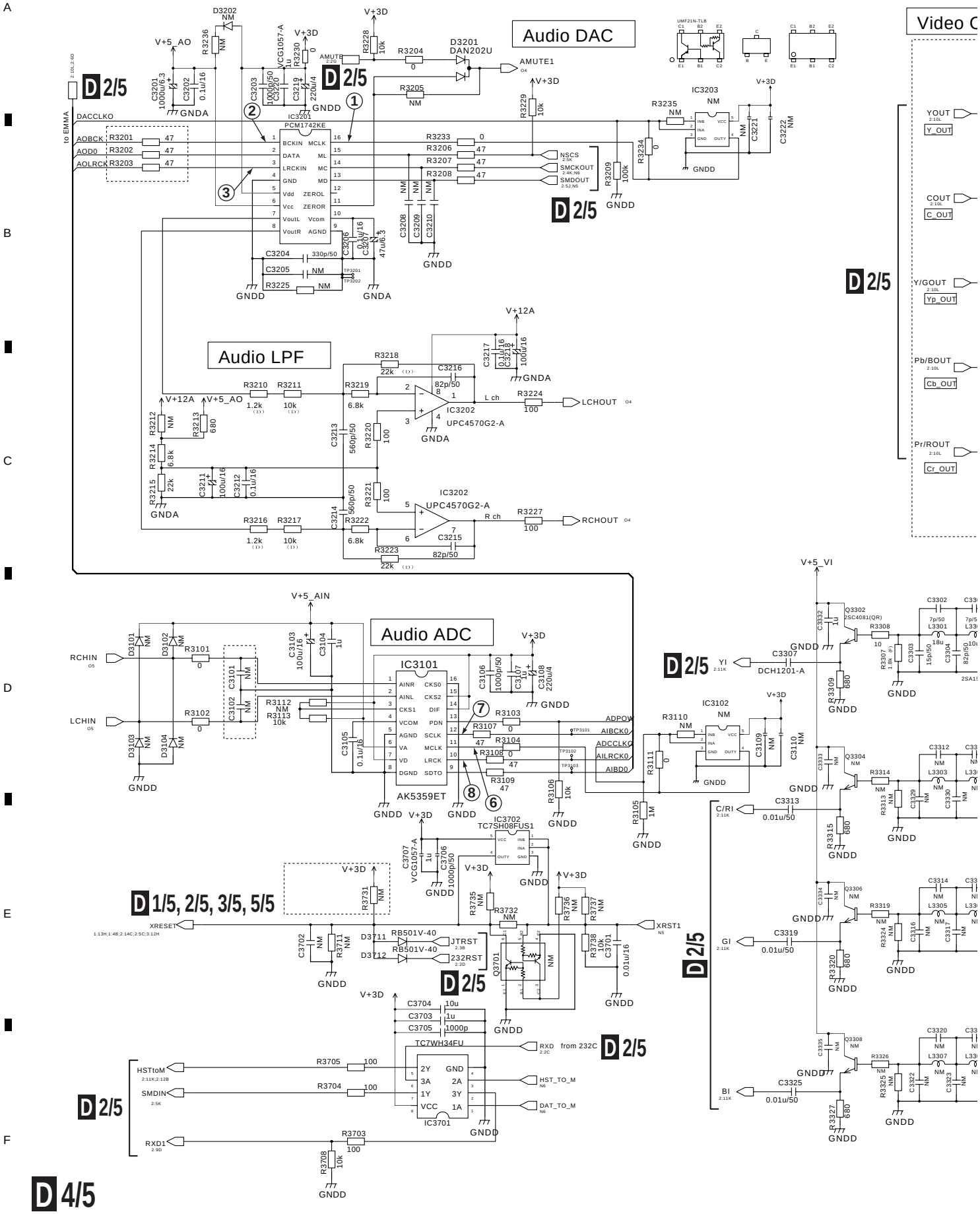
10.8 SERVICE MAIN ASSY (3/5)

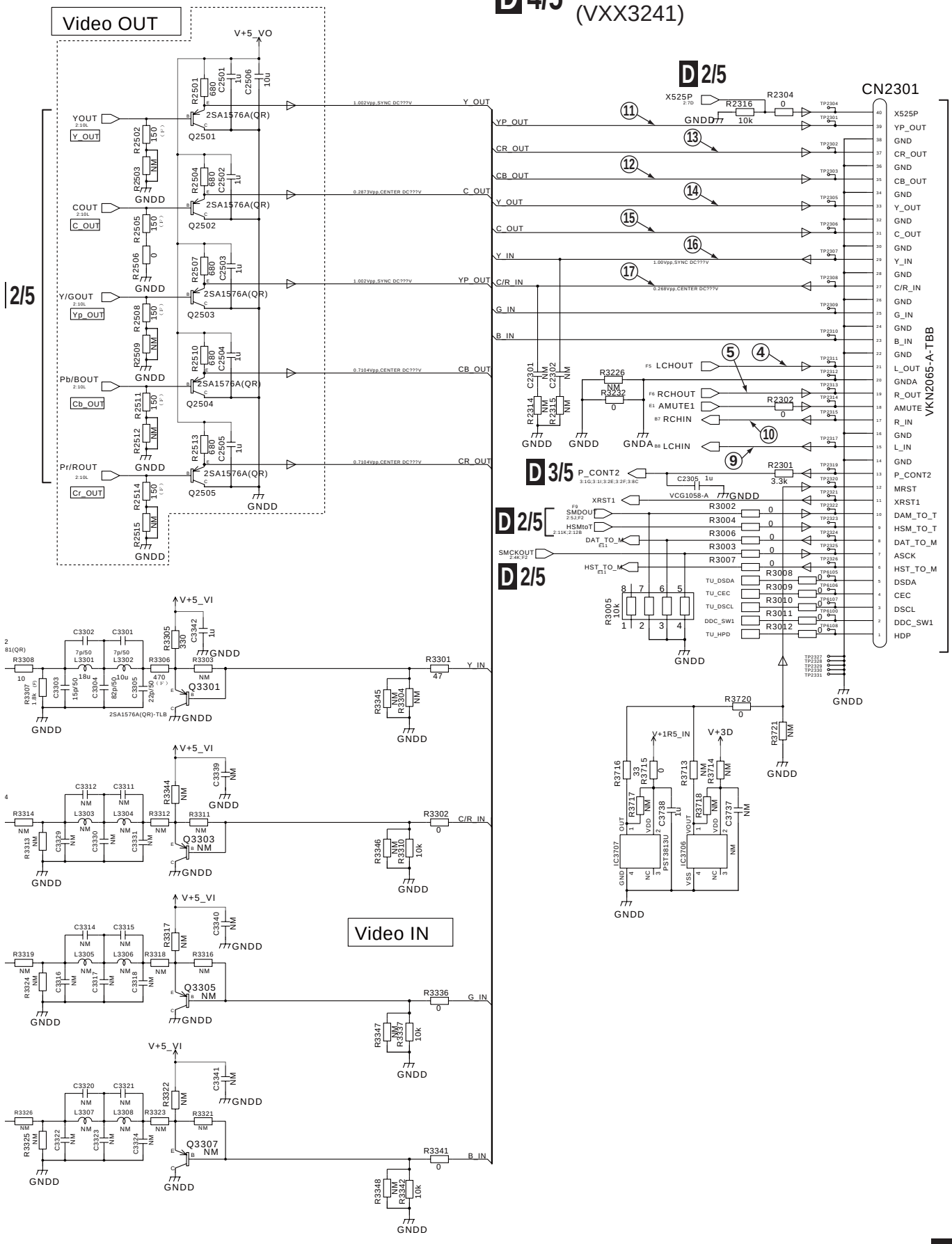



D4561
NM
V+5.8V
IC4561
TP4565
V+5HD
HDMI
S-1112B50MC-L7J
C4561 NM
C4562 1u
C4563 1u
C4564 NM
C4565 NM
GNDD
D4562
NM
V+5.8V
IC4562
TP4566
V+3HD
HDMI
S-1112B33MC-L6S
C4566 NM
C4567 1u
C4568 NM
C4569 NM
C4570 1u
L4571
NM
GNDD
D4571
RB501V-40
R4574
0
IC4571
TP4569
L4572
NM
V+1R8
SATA
S-1132B18-US
C4571 4.7u/6.3
C4572 220u/4
R4575
0
C4573 4.7u/6.3
GNDD
+12V
R4582
NM
TP4570
V+12A
Audio LPF
Q4581
2SC4081(QR)
C4581 100u/16
C4582 NM
R4581 100
C4584 NM
C4585 0.1u/16
C4586 100u/16
GNDA
V+3D
V+2R5
TP4573
VREF_D
DDR
VTT
IC4591
C4591 NM
R4591 NM
R4592 NM
C4594 NM
GNDD


IDE I/F
D 2/5, 5/5
to ATA0
CN3801
VKN1811-A-TFB
V+3D
GNDD
D3801
D 5/5
to ATA1
CN3802
KEYPIN
NM

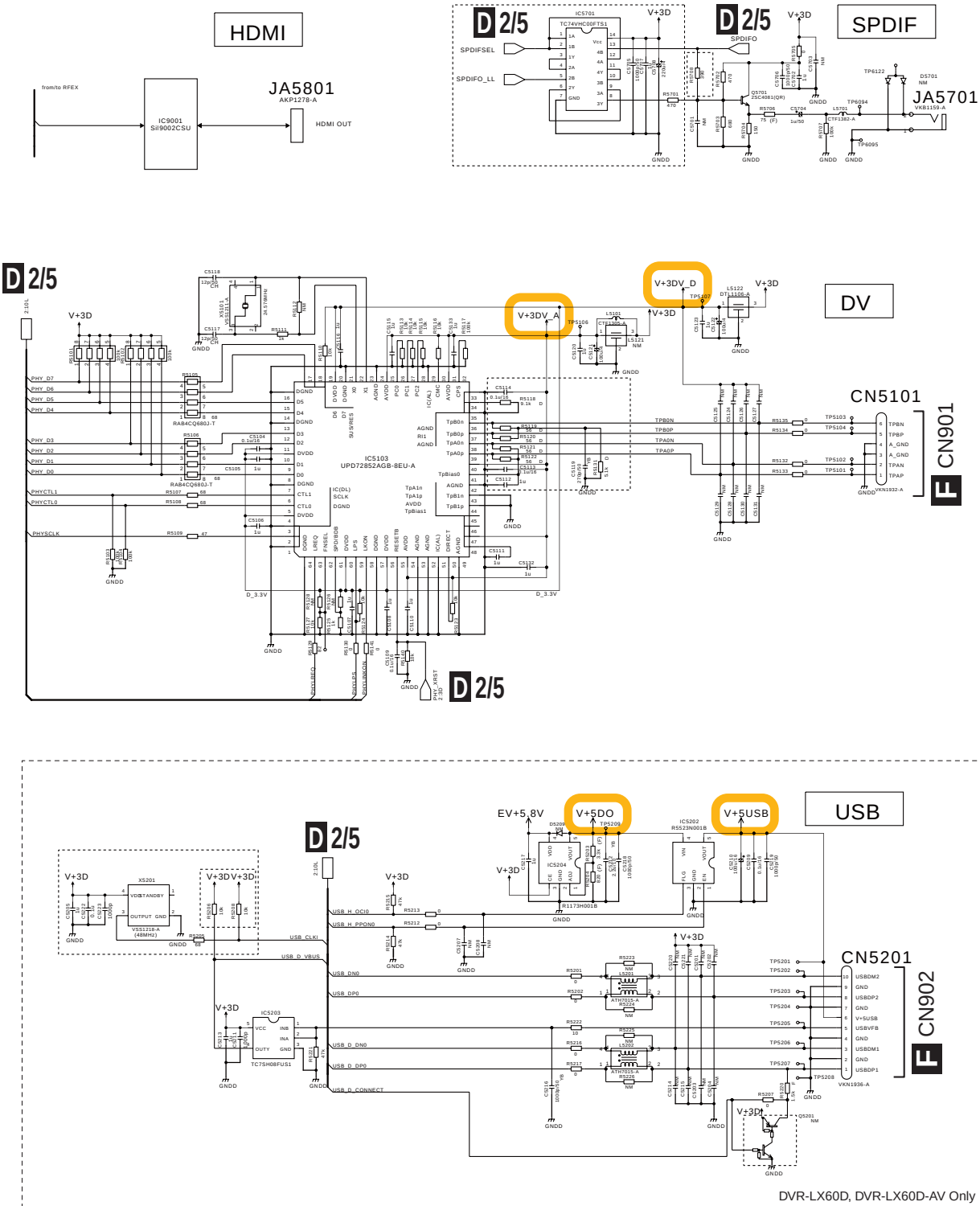
10.9 SERVICE MAIN ASSY (4/5)



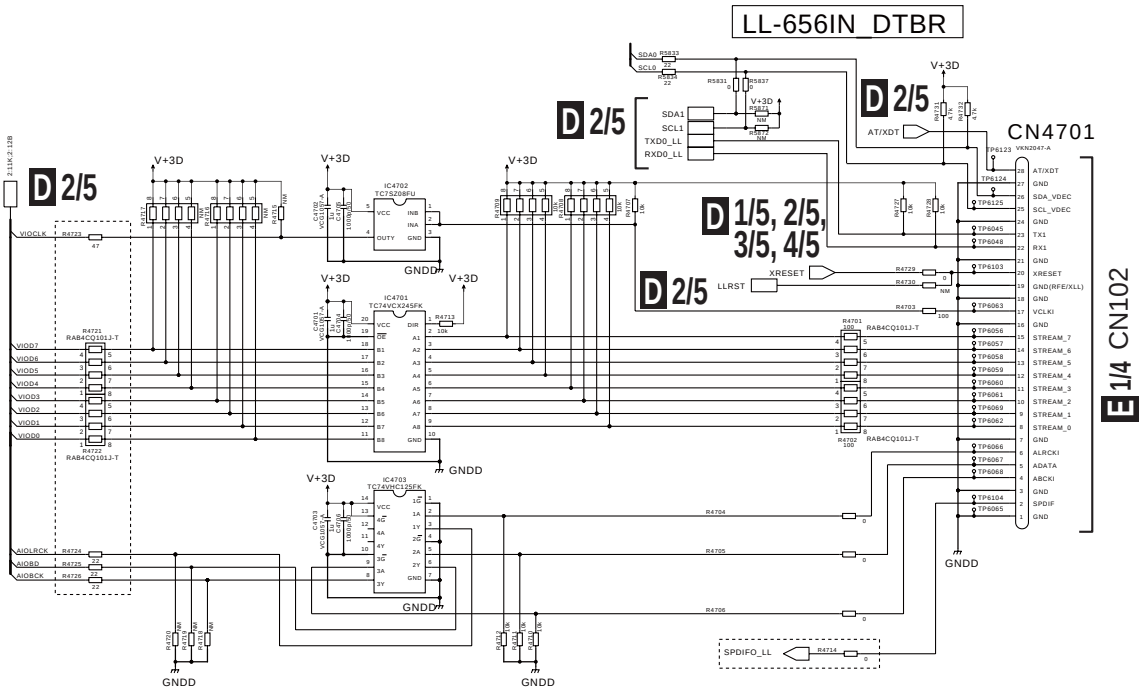

Video OUT
V+5_VO
YOUT
Y_OUT
COUT
C_OUT
Y/GOUT
Yp_OUT
Pb/BOUT
Cb_OUT
Pr/ROUT
Cr_OUT
2SA1576A(QR)
Q2501
Q2502
Q2503
Q2504
Q2505
GNDD
2/5
Y_OUT
C_OUT
YP_OUT
CB_OUT
CR_OUT
CN2301
VKN2065-A-TBB
1/4 CN101
D 2/5
D 3/5
P_CONT2
LCHOUT
RCHOUT
AMUTE1
RCHIN
LCHIN
SMDOUT
HSMtoT
DAT_TO_M
SMCKOUT
HST_TO_M
XRST1
VCG1058-A
TU_DSDA
TU_CEC
TU_DSCL
DDC_SW1
TU_HPD
V+5_VI
Y_IN
C/R_IN
G_IN
B_IN
Video IN
V+1R5_IN
V+3D
PST3813U
IC3707
IC3706

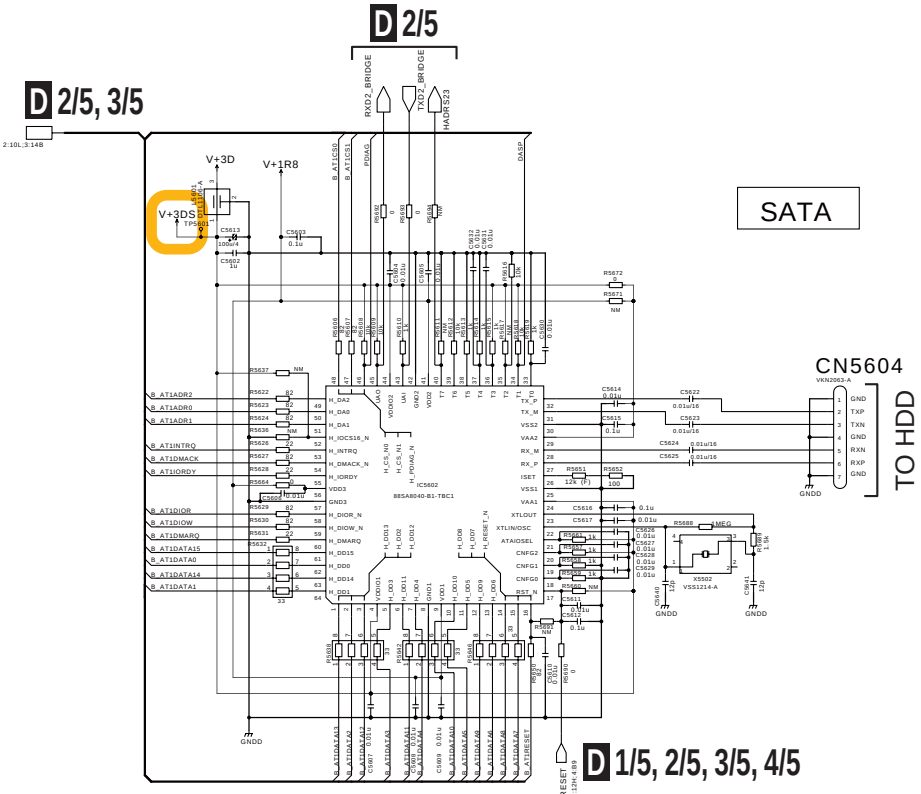
10.10 SERVICE MAIN ASSY (5/5)

D 5/5 SERVICE MAIN ASSY (5/5) (VXX3241)



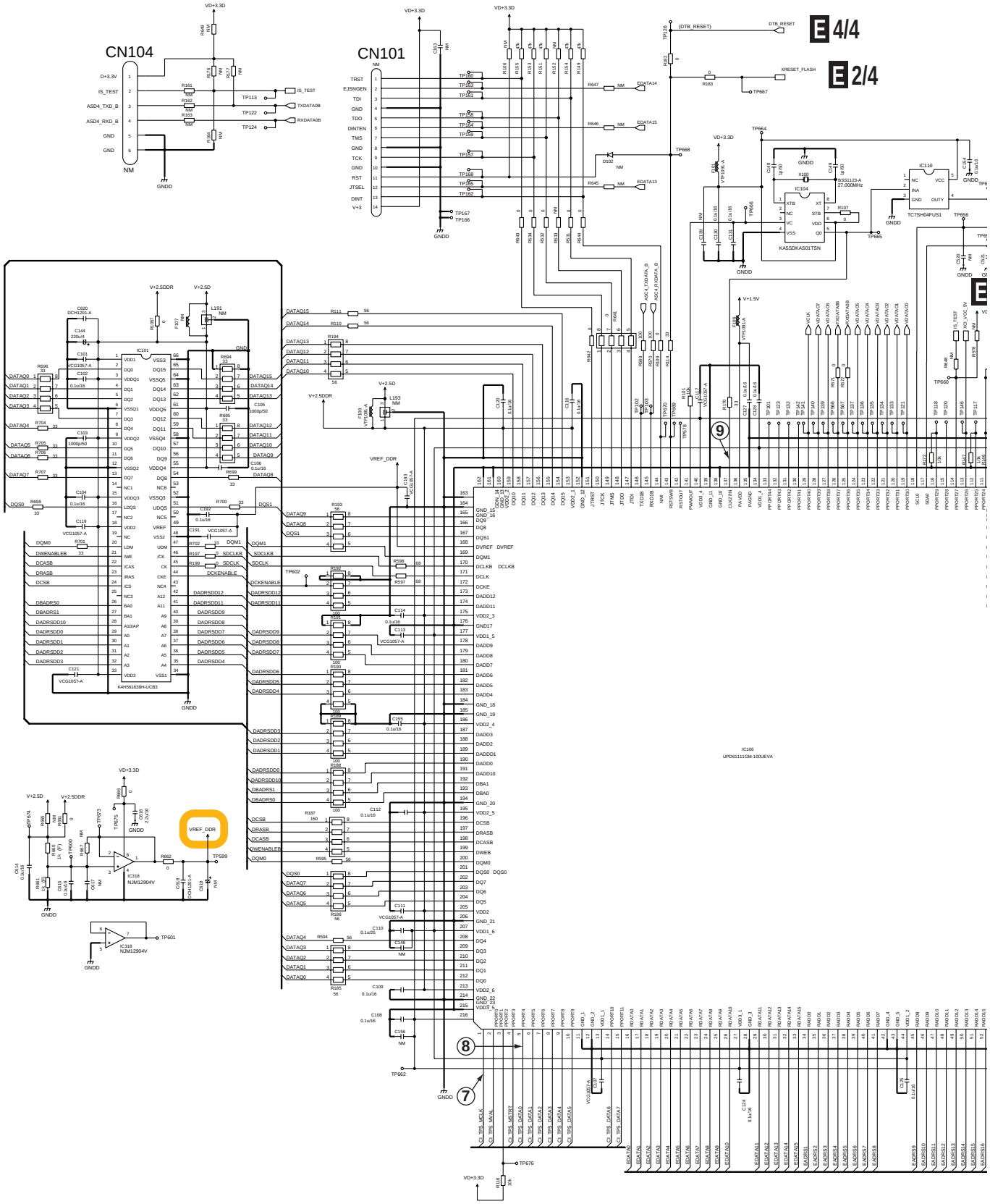
LL-656IN_DTBR

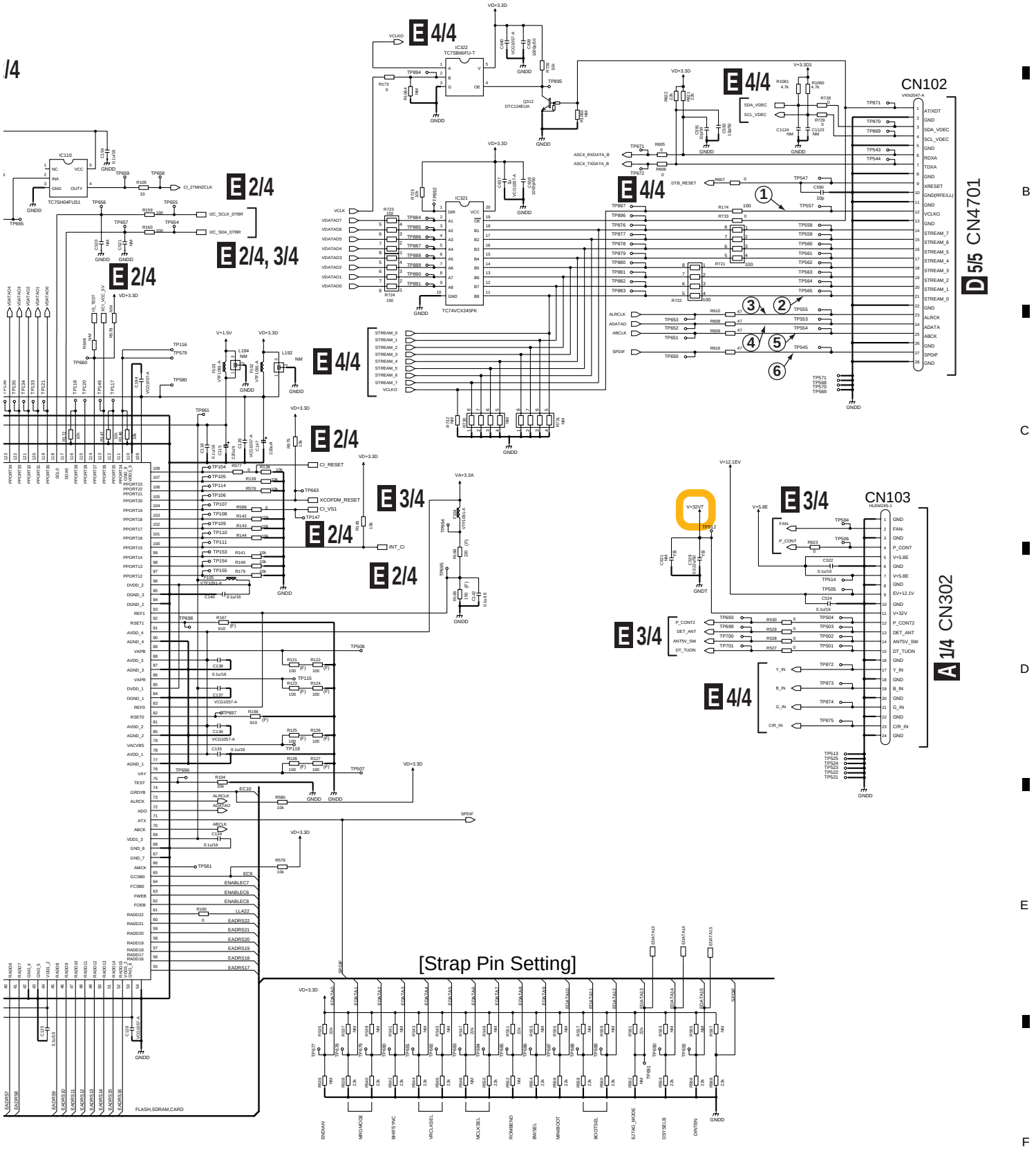




10.11 DTVD ASSY (1/4)

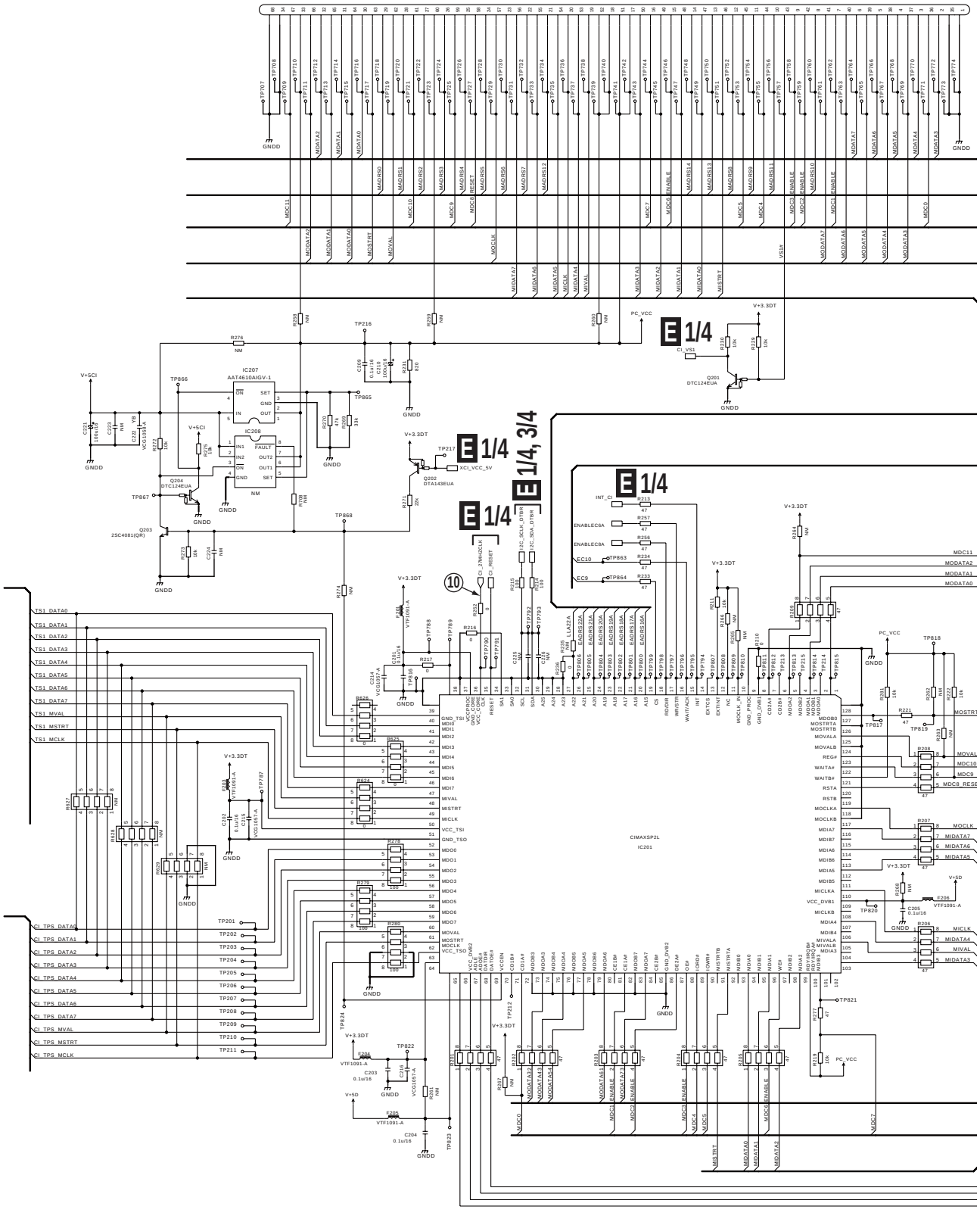
E 1/4 DTVD ASSY (1/4) (VWV2303)




E 4/4
E 2/4
E 2/4, 3/4
E 2/4
E 4/4
E 4/4
E 4/4
E 3/4
E 2/4
E 2/4
E 3/4
E 3/4
E 4/4
D 5/5 CN4701
CN102
A 1/4 CN302
CN103
[Strap Pin Setting]
E 1/4
FLASH,SDRAM,CARD

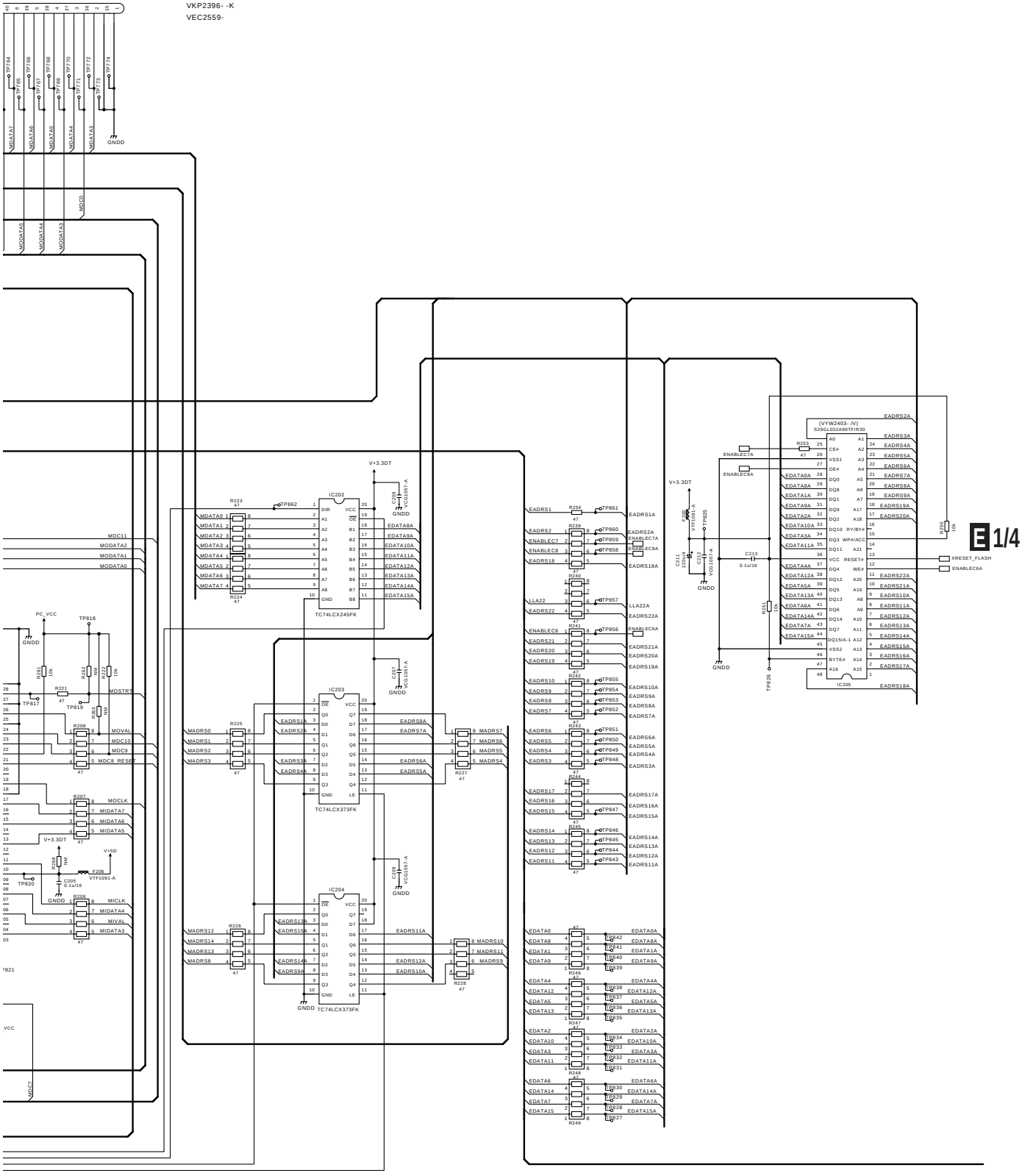
10.12 DTVD ASSY (2/4)

E 2/4 DTVD ASSY (2/4)
(VWV2303)



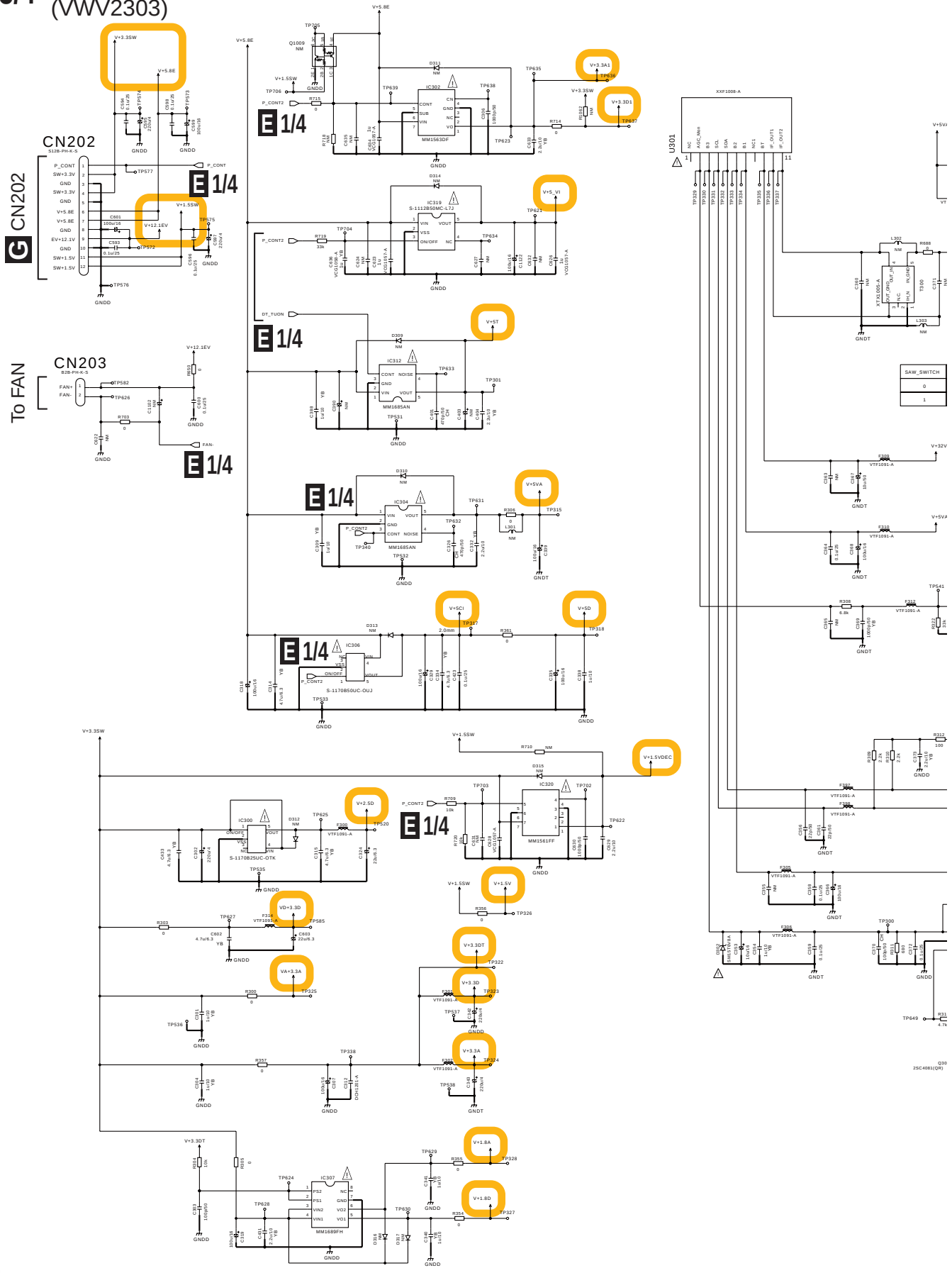
CN201

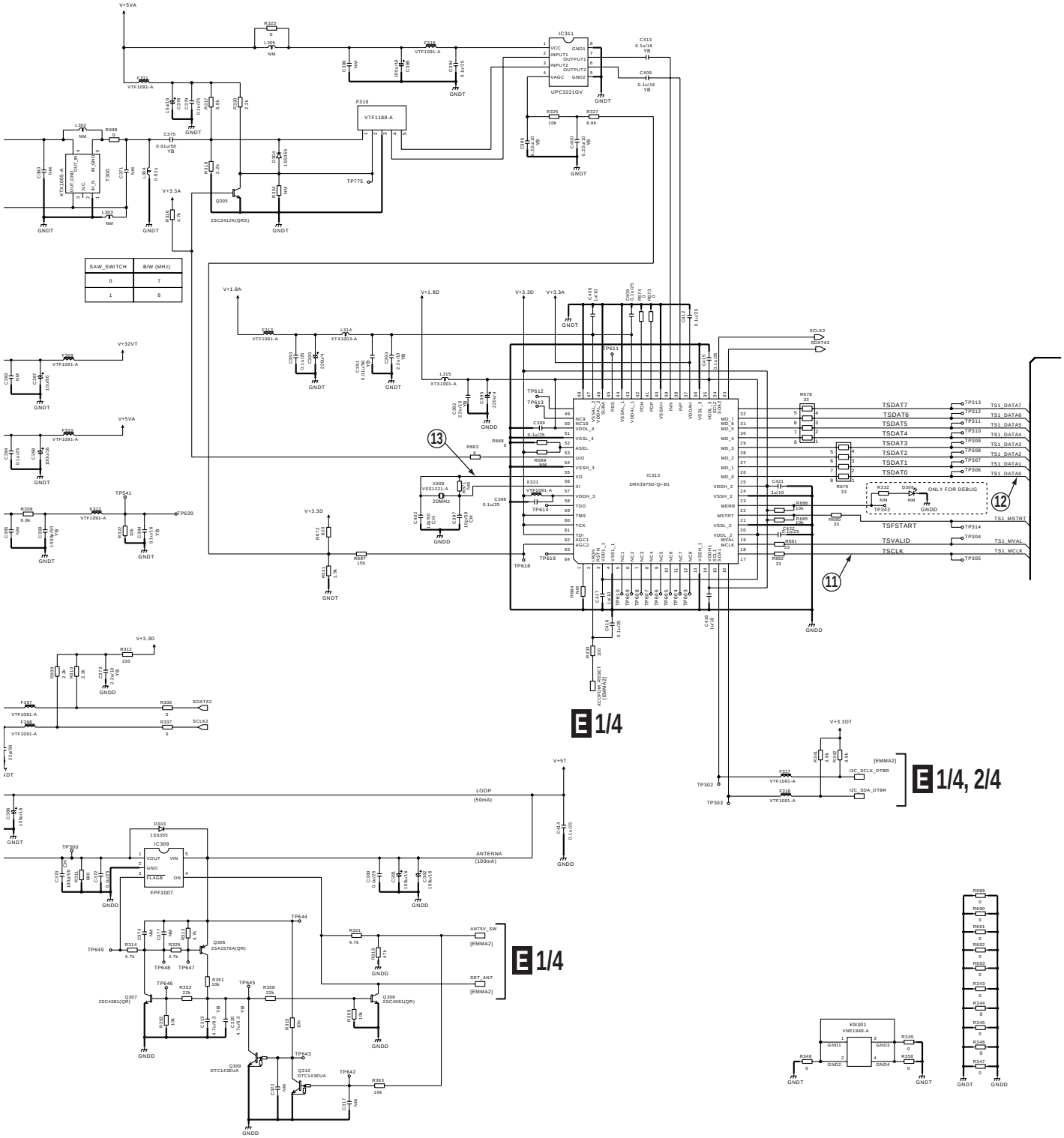
VKP2396- -K
VEC2559-



10.13 DTVD ASSY (3/4)

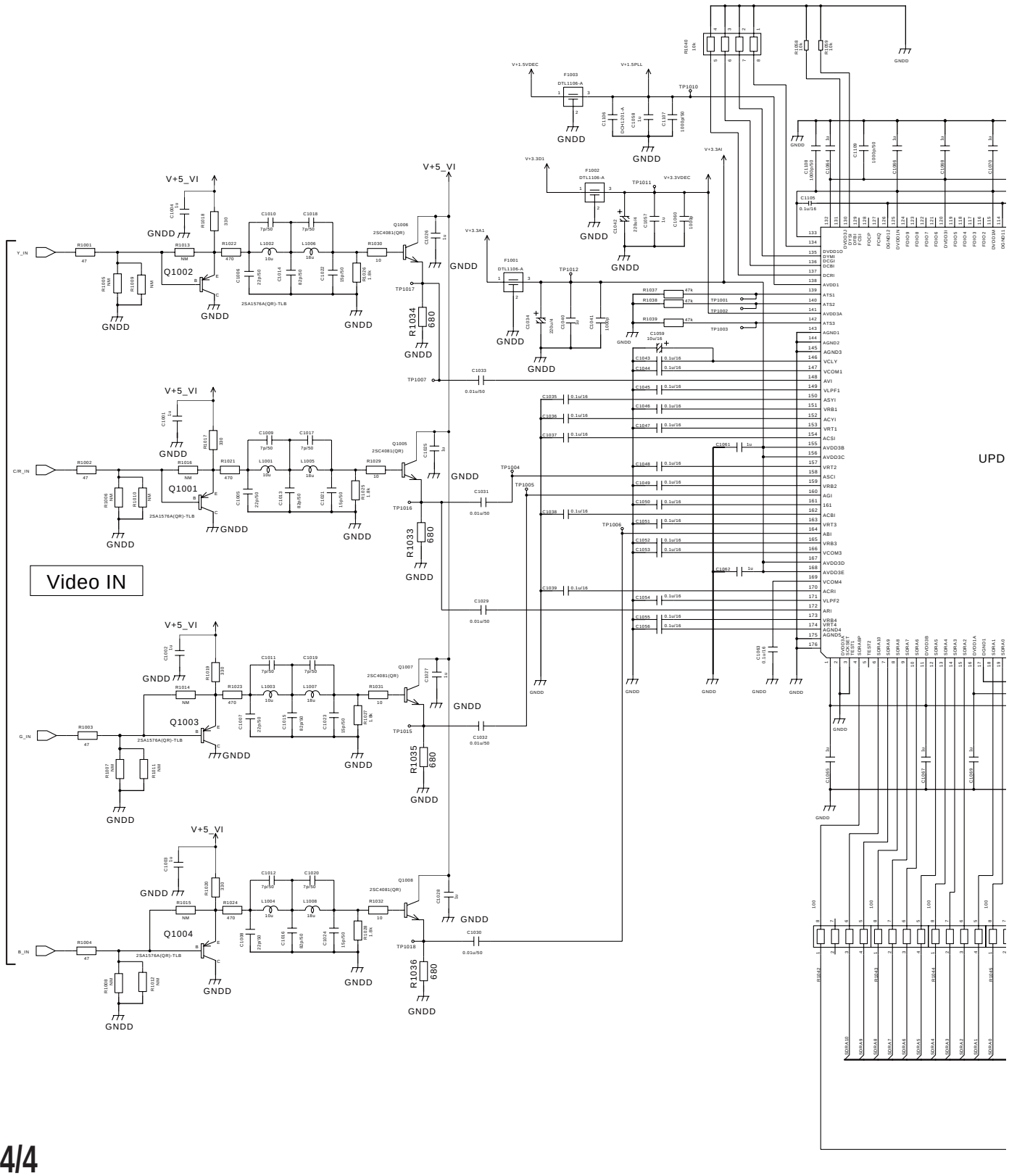
E 3/4 DTVD ASSY (3/4)
(VWV2303)

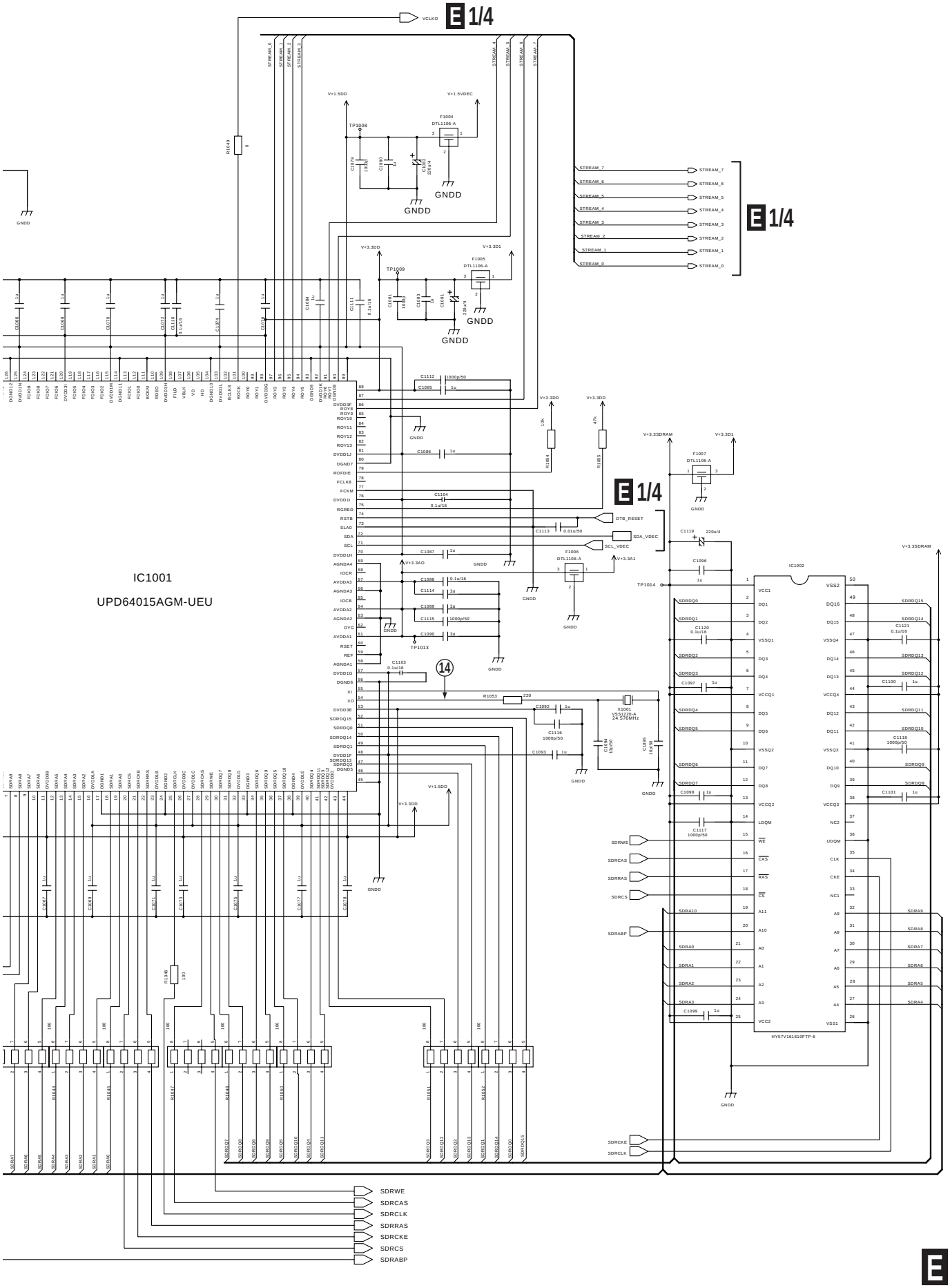



SAW_SWITCH
B/W (MHz)
0
7
1
8
IC313
DRX3975D-Q1-B1
IC311
UPC3221GV
F319
VTF1188-A
IC309
FPF2007
Q305
2SC2412K(QRS)
Q306
2SA1576A(QR)
Q307
2SC4081(QR)
Q308
2SC4081(QR)
Q309
DTC143EUA
Q310
DTC143EUA
X300
VSS1221-A
20MHz
XTX1005-A
XTX1003-A
XTX1001-A
KN3D1
VNE1948-A
ONLY FOR DEBUG
TSDAT7
TSDAT6
TSDAT5
TSDAT4
TSDAT3
TSDAT2
TSDAT1
TSDAT0
TSFSTART
TSVALID
TSCLK
LOOP
(50mA)
ANTENNA
(100mA)
ANT5V_SW
DET_ANT
I2C_SCLK_DTBR
I2C_SDA_DTBR
[EMMA2]
SDATA2
SCLK2
E 1/4
E 1/4, 2/4
E 1/4
E 3/4

10.14 DTVD ASSY (4/4)

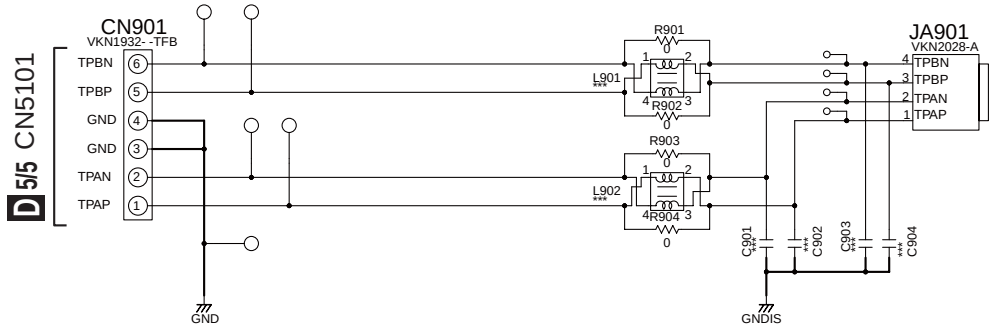
E 4/4 DTVD ASSY (4/4)
(VWV2303)

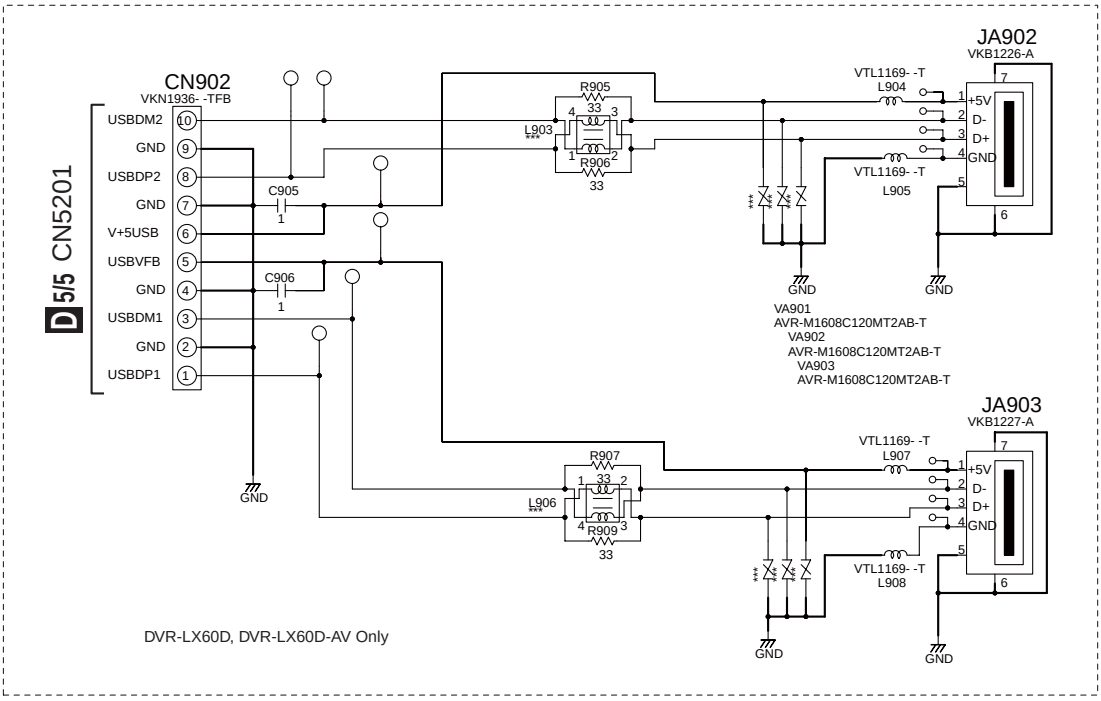



E 1/4
VCLKO
STREAM_0
STREAM_1
STREAM_2
STREAM_3
STREAM_4
STREAM_5
STREAM_6
STREAM_7
V+1.5DD
V+1.5VDEC
V+3.3DD
V+3.3D1
V+3.3SDRAM
V+3.3A0
V+3.3A1
V+1.5DD
GNDD
GND
TP1008
TP1009
TP1013
TP1014
F1004 DTL1106-A
F1005 DTL1106-A
F1006 DTL1106-A
F1007 DTL1106-A
IC1001
UPD64015AGM-UEU
IC1002
HY57V161610FTP-6
X1001 VS51220-A 24.576MHz
DTB_RESET
SDA_VDEC
SCL_VDEC
SDRWE
SDRCAS
SDRCLK
SDRRAS
SDRCKE
SDRCS
SDRABP
E 4/4

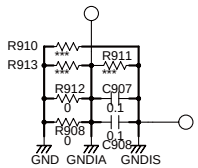
10.15 SERVICE DVUB ASSY

F SERVICE DVUB ASSY
(VXX3231 : DVR-LX60D, DVR-LX60D-AV)
(VXX3232 : DVR-550HX-S)





VA904
AVR-M1608C120MT2AB-T
VA905
AVR-M1608C120MT2AB-T
VA906
AVR-M1608C120MT2AB-T



A

B

C

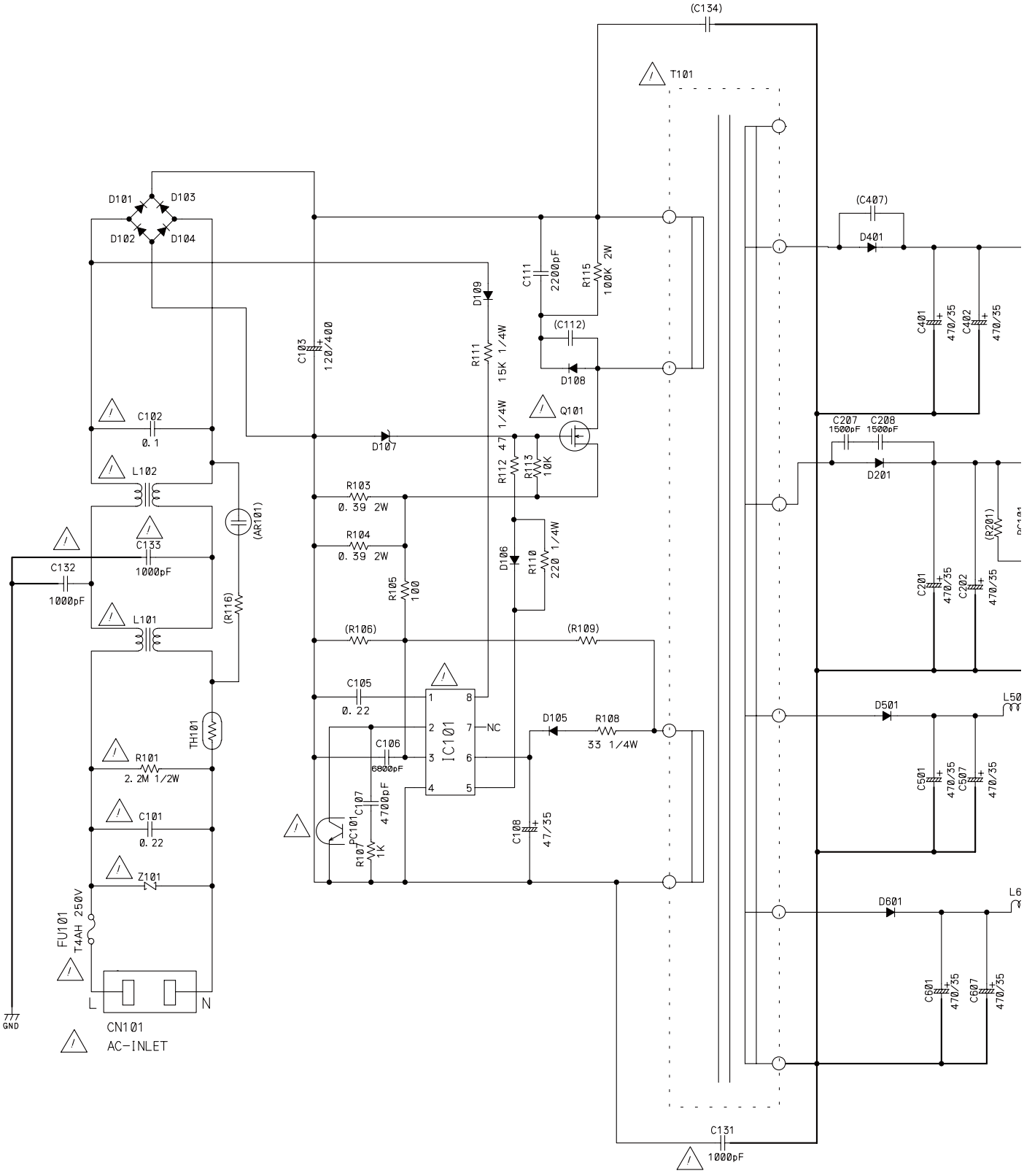
D

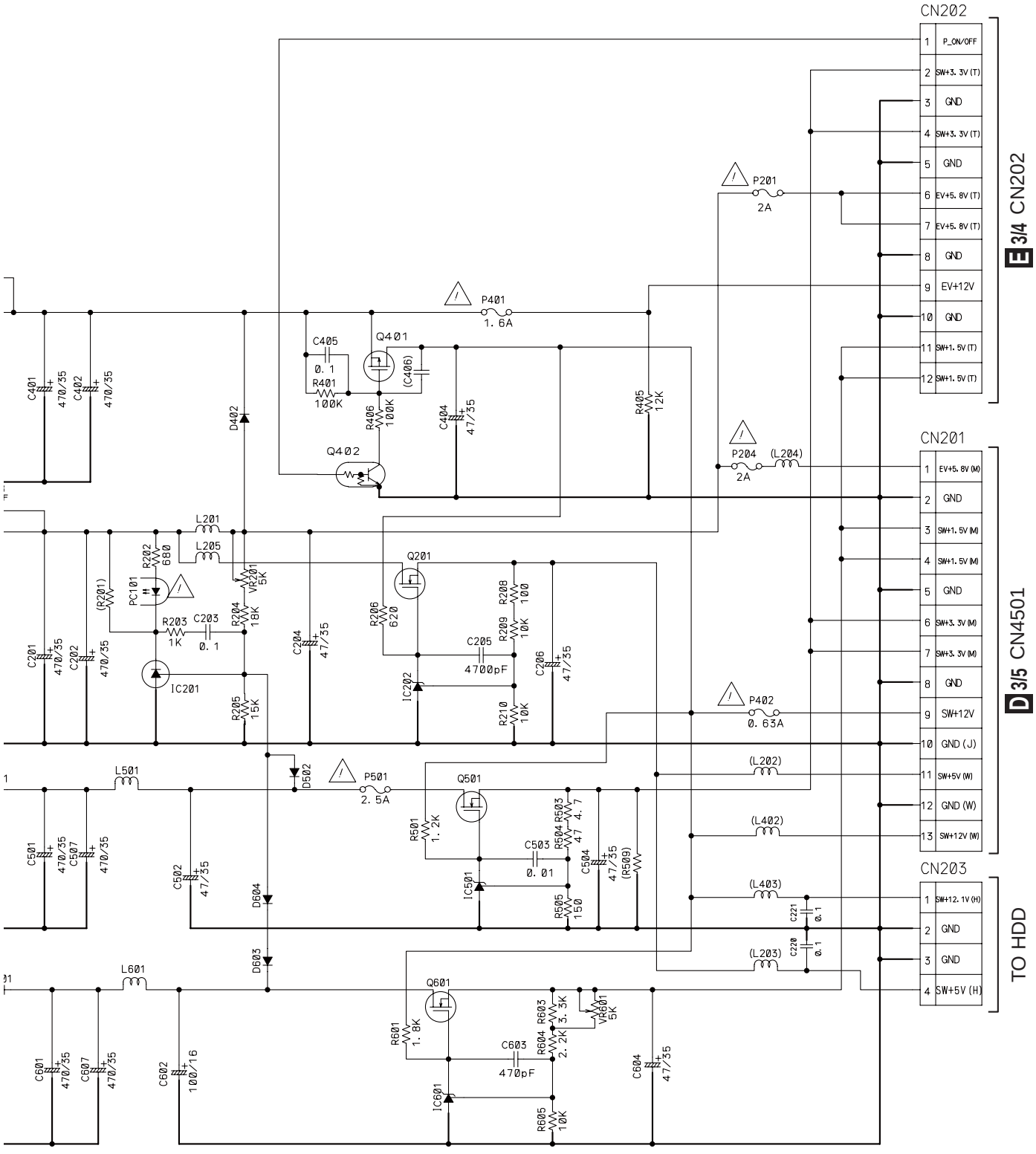
E

F

10.16 POWER SUPPLY ASSY

G POWER SUPPLY ASSY (VWR1405)





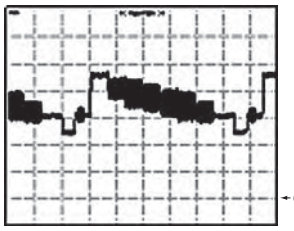
Unit	Resistor	Ω/W (under 1/4W for no direction W)
	Capacitor	μF/V (under 50V for no direction V)

10.17 WAVE FORMS

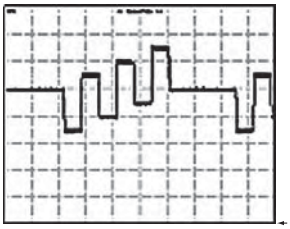
Note : The encircled numbers denote measuring point in the schematic diagram.

A SERVICE TUSB ASSY

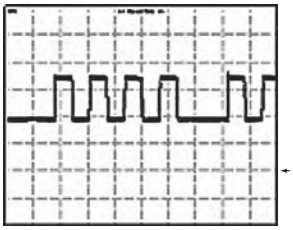
1 **IC401-pin18 (TU-VIN)**
(Function : Tuner 9ch)
V:500mV/div. H:10μsec/div.



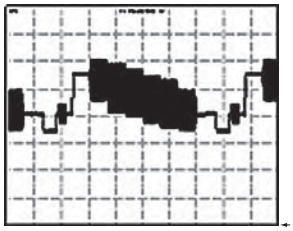
6 **C488+side (CbOUT)**
(Function : DVD play)
V:500mV/div. H:10μsec/div.



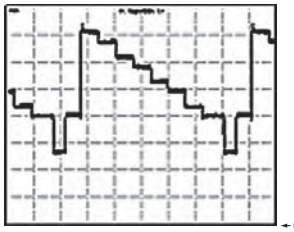
11 **CN101-pin6 (Cb_OUT MtoT)**
(Function : DVD play)
V:500mV/div. H:10μsec/div.



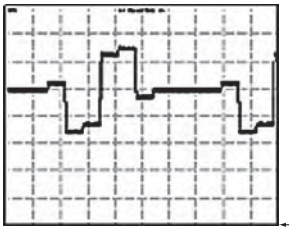
16 **IC401-pin14 (2VIN)**
(Function : LINE2 IN)
V:500mV/div. H:10μsec/div.



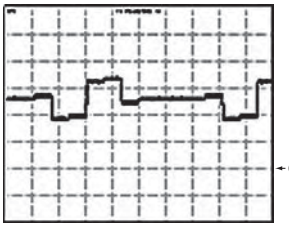
2 **C486+side (Y2OUT)**
(Function : DVD play)
V:500mV/div. H:10μsec/div.



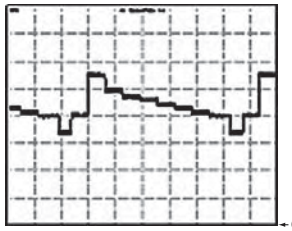
7 **C489+side (CrOUT)**
(Function : DVD play)
V:500mV/div. H:10μsec/div.



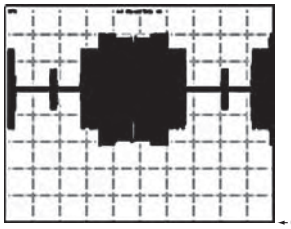
12 **CN101-pin4 (Cr_OUT MtoT)**
(Function : DVD play)
V:500mV/div. H:10μsec/div.



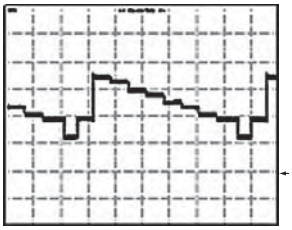
17 **IC401-pin7 (Y2IN)**
(Function : LINE2 IN)
V:500mV/div. H:10μsec/div.



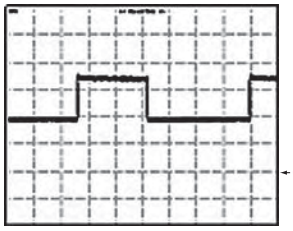
3 **IC401-pin34 (C2OUT)**
(Function : DVD play)
V:500mV/div. H:10μsec/div.



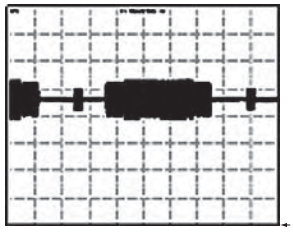
8 **CN101-pin8 (Y_OUT MtoT)**
(Function : Tuner 9ch)
V:500mV/div. H:10μsec/div.



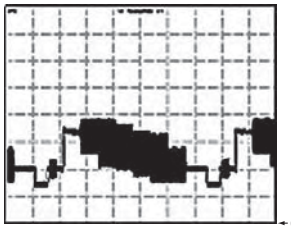
13 **CN101-pin2 (Y/G_OUT MtoT)**
(Function : DVD play)
V:500mV/div. H:10μsec/div.



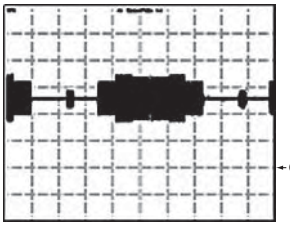
18 **IC401-pin9 (C2IN)**
(Function : LINE2 IN)
V:500mV/div. H:10μsec/div.



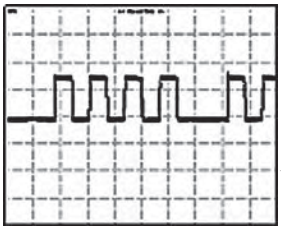
4 **C409+side (V1OUT)**
(Function : DVD play)
V:1V/div. H:10μsec/div.



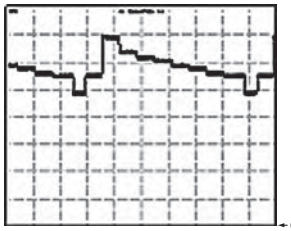
9 **CN101-pin10 (C_OUT MtoT)**
(Function : DVD play)
V:500mV/div. H:10μsec/div.



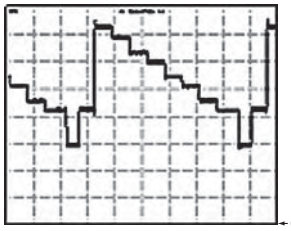
14 **CN101-pin6 (Cb/B_OUT MtoT)**
(Function : DVD play)
V:500mV/div. H:10μsec/div.



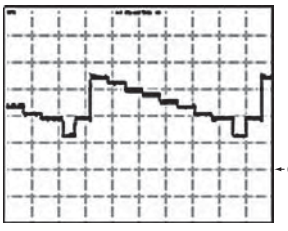
19 **CN308-pin8 (Y_IN TtoM)**
(Function : LINE2 IN)
V:500mV/div. H:10μsec/div.



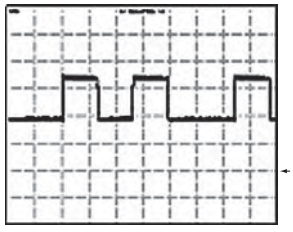
5 **C487+side (YOUT)**
(Function : DVD play)
V:500mV/div. H:10μsec/div.



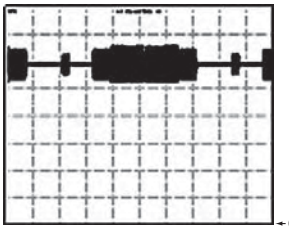
10 **CN101-pin2 (Yp_OUT MtoT)**
(Function : DVD play)
V:500mV/div. H:10μsec/div.



15 **CN101-pin4 (Cr/R_OUT MtoT)**
(Function : DVD play)
V:500mV/div. H:10μsec/div.



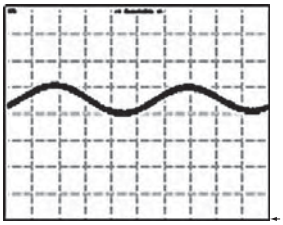
20 **CN302-pin2 (C_IN TtoM)**
(Function : LINE2 IN)
V:500mV/div. H:10μsec/div.



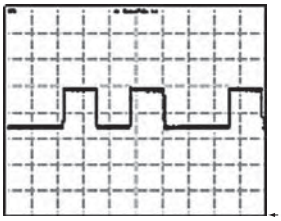
A SERVICE TUSB ASSY

Measurement Condition :

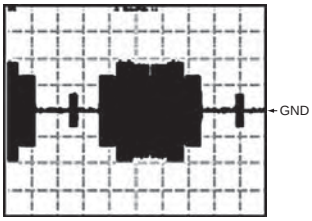
21 **IC401-pin21 (TU-LIN)**
(Function : Tuner 9ch)
V:500mV/div. H:10μsec/div.



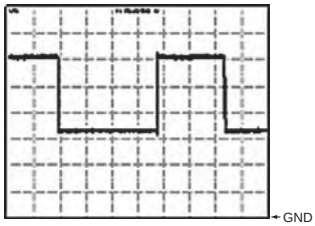
25 **JA801-pin15 (R/C IN)**
(Function : LINE1 IN)
V:500mV/div. H:10μsec/div.



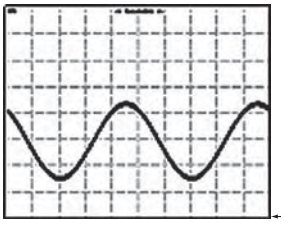
29 **JA801-pin15 (R/C IN)**
(Function : LINE1 IN)
V:500mV/div. H:10μsec/div.



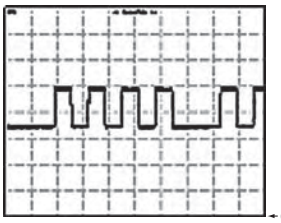
33 **C530+side (AV1_G_OUT)**
(Function : DVD play)
V:500mV/div. H:10μsec/div.



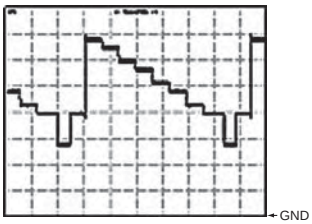
22 **C491+side (L_OUT)**
Function : DVD play)
V:500mV/div. H:10μsec/div.



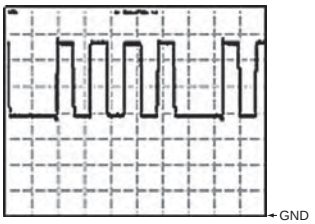
26 **JA801-pin7 (BIN)**
(Function : LINE1 IN)
V:500mV/div. H:10μsec/div.



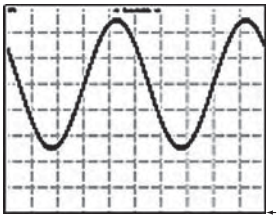
30 **C532+side (AV1_V/Y_OUT)**
(Function : DVD play)
V:500mV/div. H:10μsec/div.



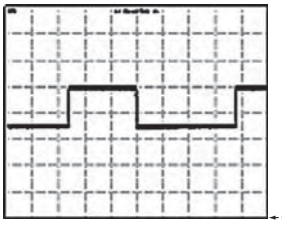
34 **C529+side (AV1_B_OUT)**
(Function : DVD play)
V:500mV/div. H:10μsec/div.



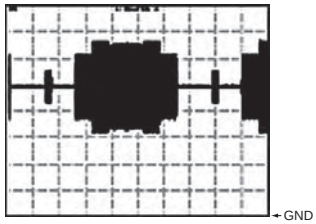
23 **CN101-pin26 (L_IN)**
(Function : LINE2 IN)
V:500mV/div. H:10μsec/div.



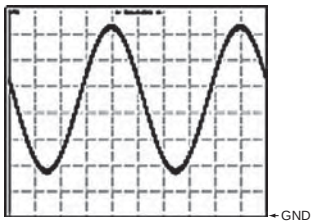
27 **JA801-pin11 (G IN)**
(Function : LINE1 IN)
V:500mV/div. H:10μsec/div.



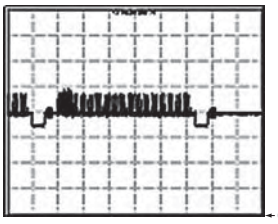
31 **C531+side (AV1_R/C_OUT)**
(Function : DVD play)
V:500mV/div. H:10μsec/div.



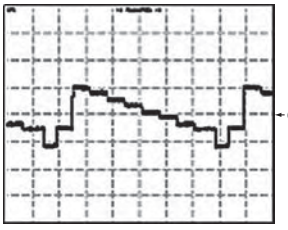
35 **C542+side (AV1_L_OUT)**
(Function : DVD play)
V:500mV/div. H:10μsec/div.



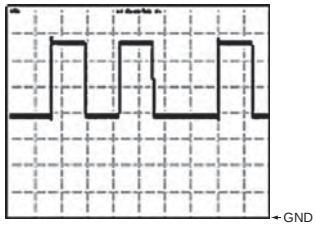
24 **IC101-pin81 (TEXTV)**
(Function : RF IN)
V:1V/div. H:10μsec/div.



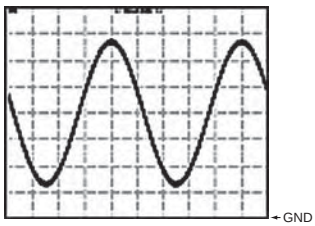
28 **JA801-pin20 (AV2_V/Y IN))**
(Function : LINE1 IN)
V:1V/div. H:10μsec/div.



32 **C531+side (AV1_R/C_OUT)**
(Function : DVD play)
V:500mV/div. H:10μsec/div.



36 **JA801-pin6 (AV2_L_IN)**
(Function : LINE1 IN)
V:1V/div. H:10μsec/div.

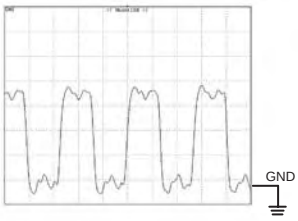


D SERVICE MAIN ASSY

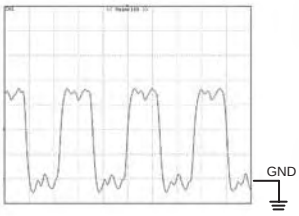
Measurement Condition :

No.1 - 8 : EBU Color Bar (100 / 0 / 75 / 0)

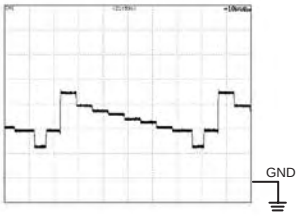
1 **IC3201 Pin16 (DACMCK)**
V: 1V/div. H: 20ns/div.



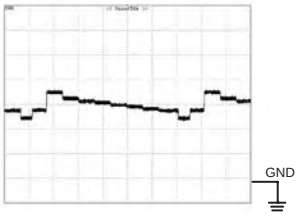
6 **IC3101 Pin11 (ADCCLK0)**
V: 1V/div. H: 20ns/div.



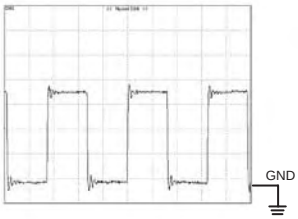
11 **CN2301 Pin39 (YP)**
V: 0.5V/div. H: 10us/div.



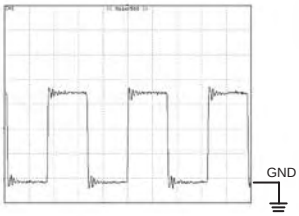
16 **CN2301 Pin29 (S_Y)**
V: 1V/div. H: 10us/div.



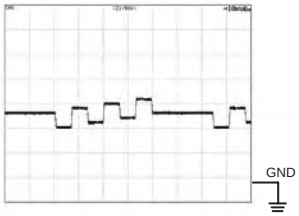
2 **IC3201 Pin1 (DACBCK)**
V: 1V/div. H: 100ns/div.



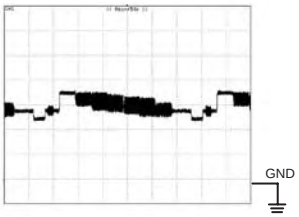
7 **IC3101 Pin12 (AD_BCK)**
V: 1V/div. H: 100ns/div.



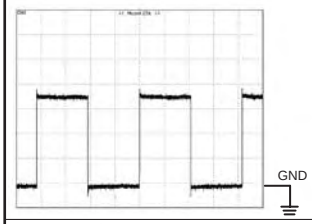
12 **CN2301 Pin35 (CB)**
V: 0.5V/div. H: 10us/div.



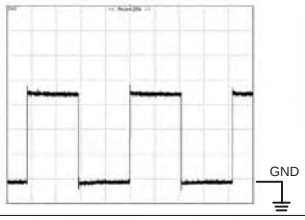
16 **CN2301 Pin29 (CVBS)**
V: 1V/div. H: 10us/div.



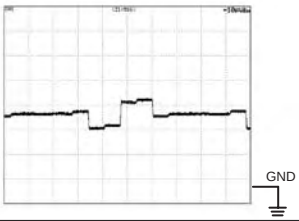
3 **IC3201 Pin3 (DACLRCK)**
V: 1V/div. H: 5us/div.



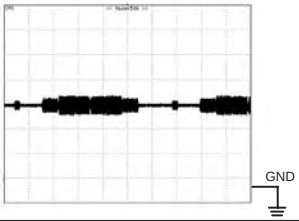
8 **IC3101 Pin10 (AD_LRCK)**
V: 1V/div. H: 5us/div.



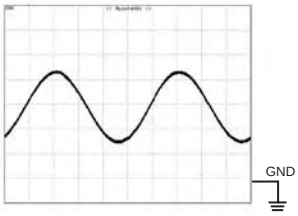
13 **CN2301 Pin37 (CR)**
V: 0.5V/div. H: 10us/div.



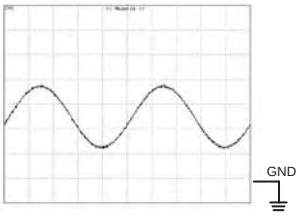
17 **CN2301 Pin27 (S_C)**
V: 1V/div. H: 10us/div.



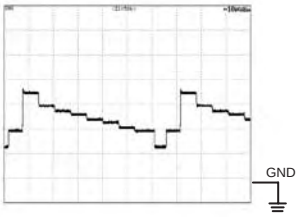
4 **CN2301 Pin21 (LCHOUT)**
V: 2V/div. H: 200us/div.



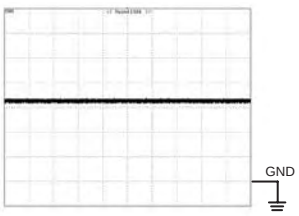
9 **CN2301 Pin15 (LCHIN)**
V: 1V/div. H: 200us/div.



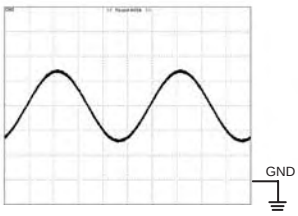
14 **CN2301 Pin33 (Y)**
V: 0.5V/div. H: 10us/div.



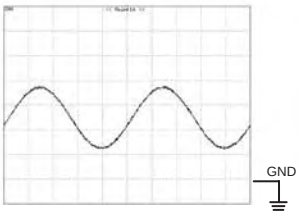
18 **IC501 Pin34 (XDMUTE1)**
V: 1V/div. H: 20us/div.



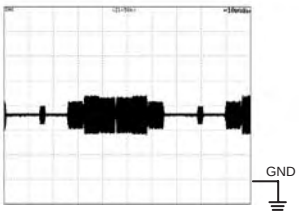
5 **CN2301 Pin19 (RCHOUT)**
V: 2V/div. H: 200us/div.



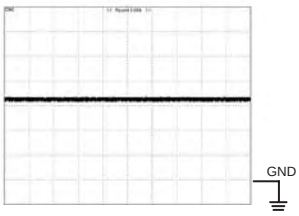
10 **CN2301 Pin17 (RCHIN)**
V: 1V/div. H: 200us/div.



15 **CN2301 Pin31 (C)**
V: 0.5V/div. H: 10us/div.

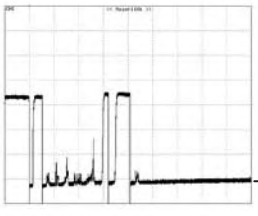


19 **IC501 Pin35 (XDMUTE2)**
V: 1V/div. H: 20us/div.

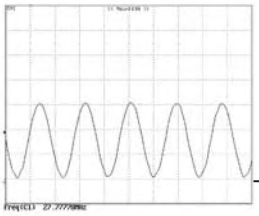


D SERVICE MAIN ASSY

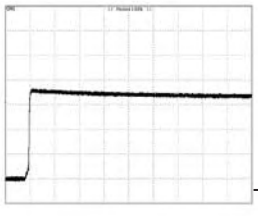
20 **CN601 Pin3 (CLOSE)**
open → close
V: 1V/div. H: 20us/div.



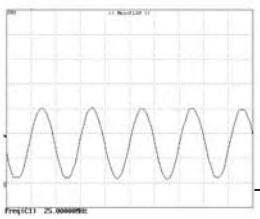
23 **X1002 (27.77778 MHz)**
V: 1V/div. H: 20ns/div.



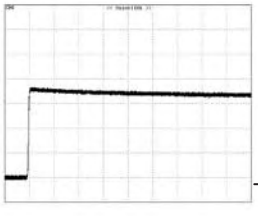
20 **CN601 Pin3 (CLOSE)**
close → open
V: 1V/div. H: 20us/div.



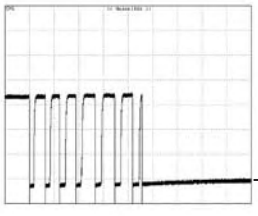
24 **X1001 (25 MHz)**
V: 1V/div. H: 20ns/div.



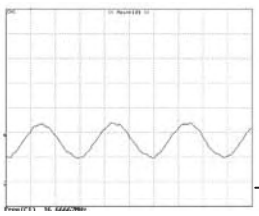
21 **CN601 Pin5 (OPEN)**
open → close
V: 1V/div. H: 20us/div.



21 **CN601 Pin5 (OPEN)**
close → open
V: 1V/div. H: 20us/div.



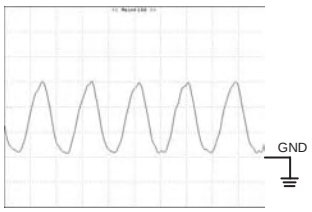
22 **X101 (16.66667 MHz)**
V: 1V/div. H: 20ns/div.



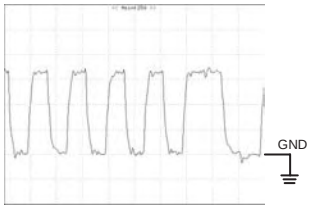
E DTVD ASSY

Measurement Condition :

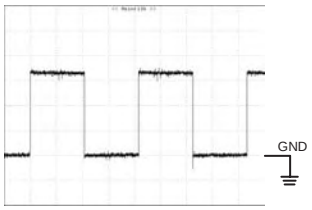
1 **CN102 Pin12 (VCLKO)**
V: 1V/div. H: 20ns/div.



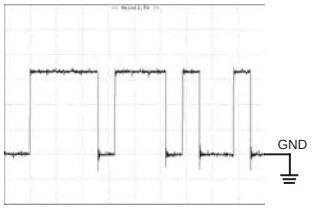
2 **CN102 Pin21 (STREAM)**
V: 1V/div. H: 50ns/div.



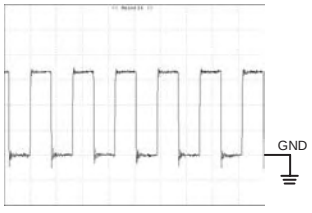
3 **CN102 Pin23 (ALRCK)**
V: 1V/div. H: 5us/div.



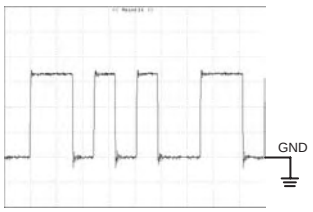
4 **CN102 Pin24 (ADATA)**
V: 1V/div. H: 500ns/div.



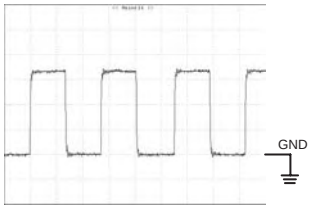
5 **CN102 Pin25 (ABCK)**
V: 1V/div. H: 200ns/div.



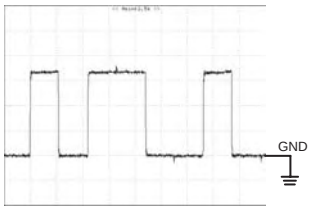
6 **CN102 Pin27 (SPDIF)**
V: 1V/div. H: 200ns/div.



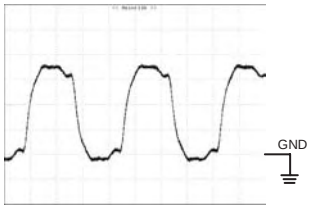
7 **IC106 Pin1 (CI_TPS_MCLK)**
V: 1V/div. H: 200ns/div.



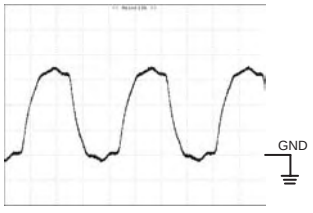
8 **IC106 Pin5 (CI_TPS_DATA0)**
V: 1V/div. H: 500ns/div.



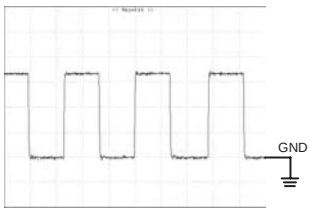
9 **IC106 Pin137 (CLK27IN)**
V: 1V/div. H: 10ns/div.



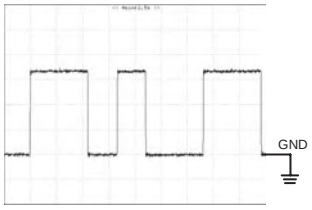
10 **IC201 Pin36 (CI_27MHZCLK)**
V: 1V/div. H: 10ns/div.



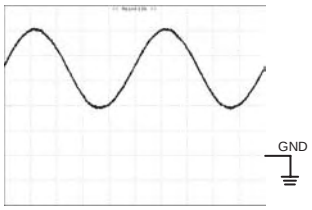
11 **IC313 Pin17 (TSCLK)**
V: 1V/div. H: 200ns/div.



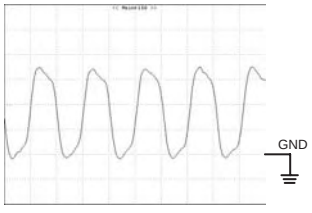
12 **IC313 Pin25 (TSDAT0)**
V: 1V/div. H: 500ns/div.



13 **IC313 Pin56 (XO)**
V: 0.5V/div. H: 10ns/div.



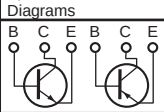
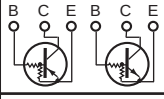
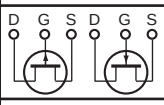
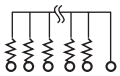
14 **IC1001 Pin54 (XO)**
V: 1V/div. H: 20ns/div.



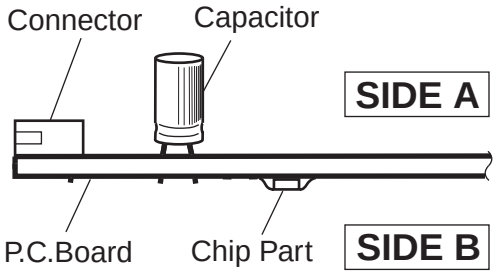
11. PCB CONNECTION DIAGRAM

NOTE FOR PCB DIAGRAMS :

1. Part numbers in PCB diagrams match those in the schematic diagrams.
2. A comparison between the main parts of PCB and schematic diagrams is shown below.

Symbol In PCB Diagrams	Symbol In Schematic Diagrams	Part Name
		Transistor
		Transistor with resistor
		Field effect transistor
		Resistor array
		3-terminal regulator

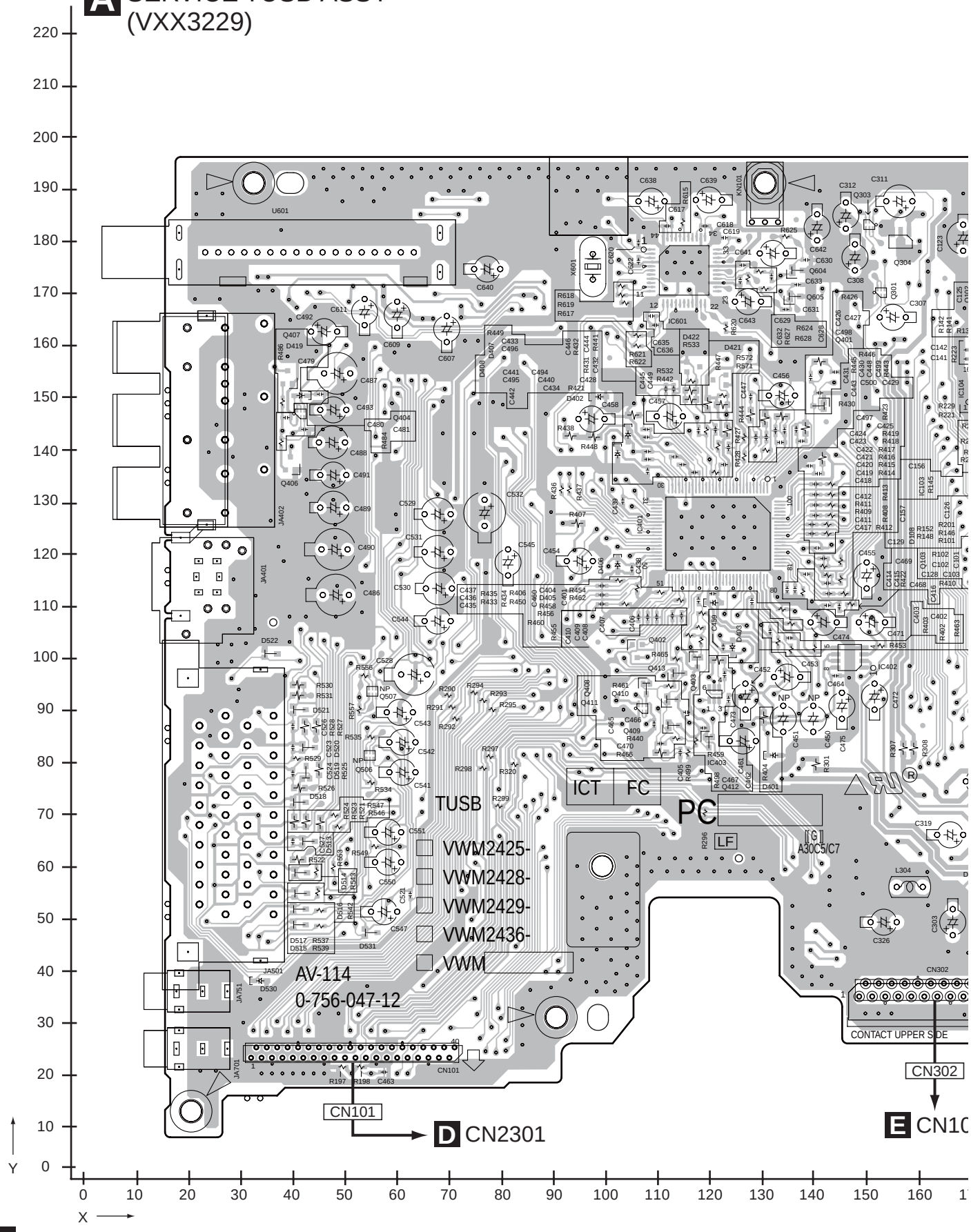
3. The parts mounted on this PCB include all necessary parts for several destinations.
   For further information for respective destinations, be sure to check with the schematic diagram.
4. View point of PCB diagrams.



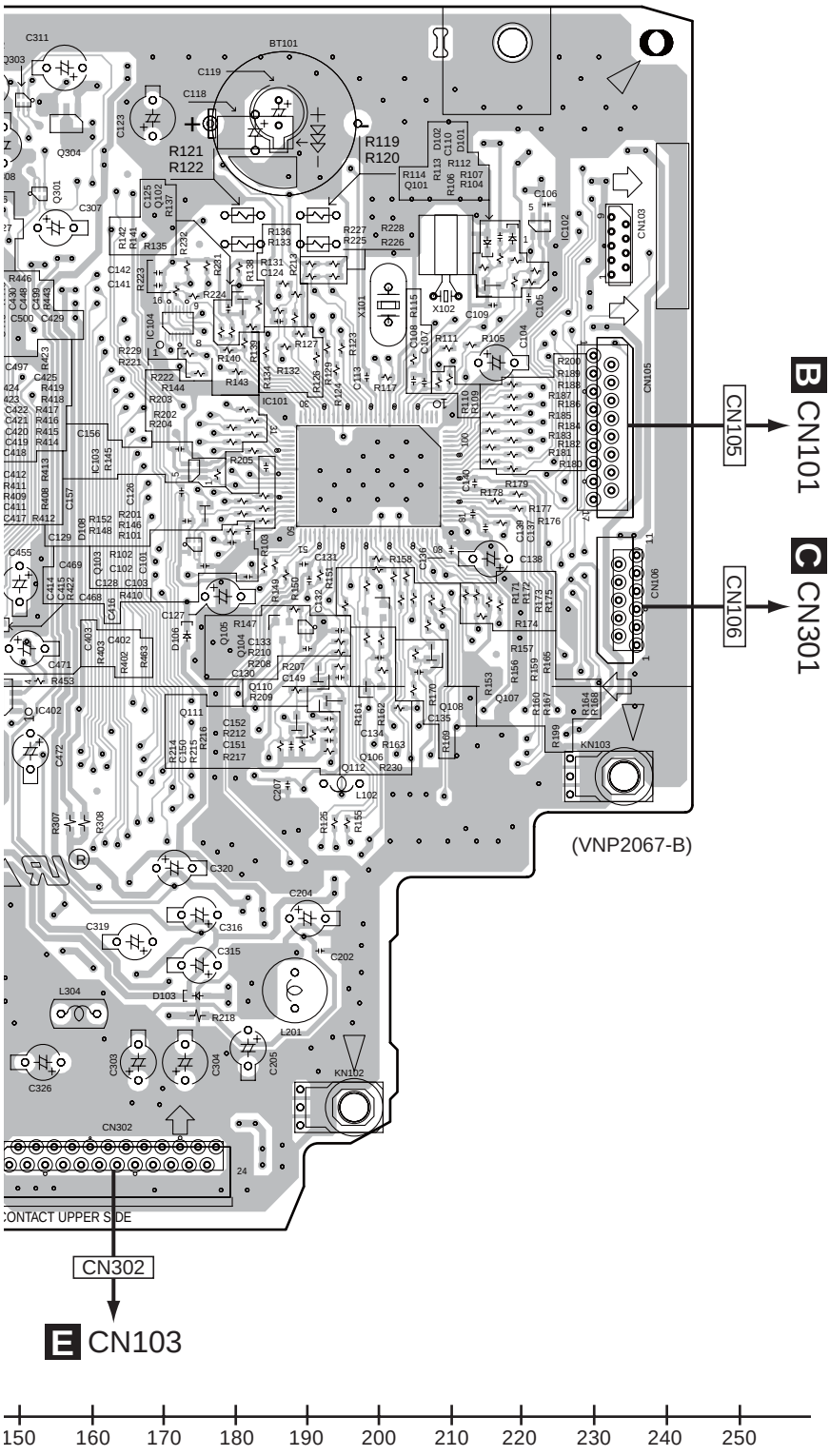
11.1 SERVICE TUSB ASSY

SIDE A

A SERVICE TUSB ASSY
(VXX3229)



SIDE A

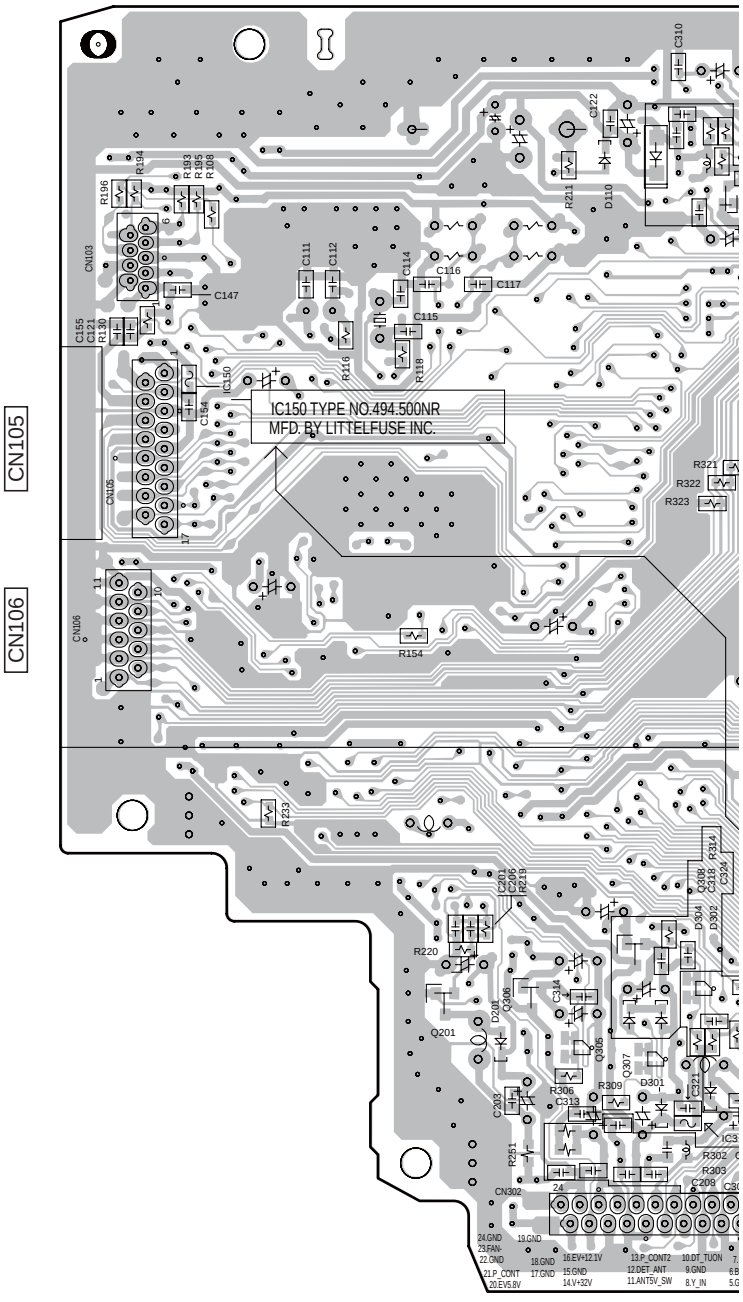


A B C D E F

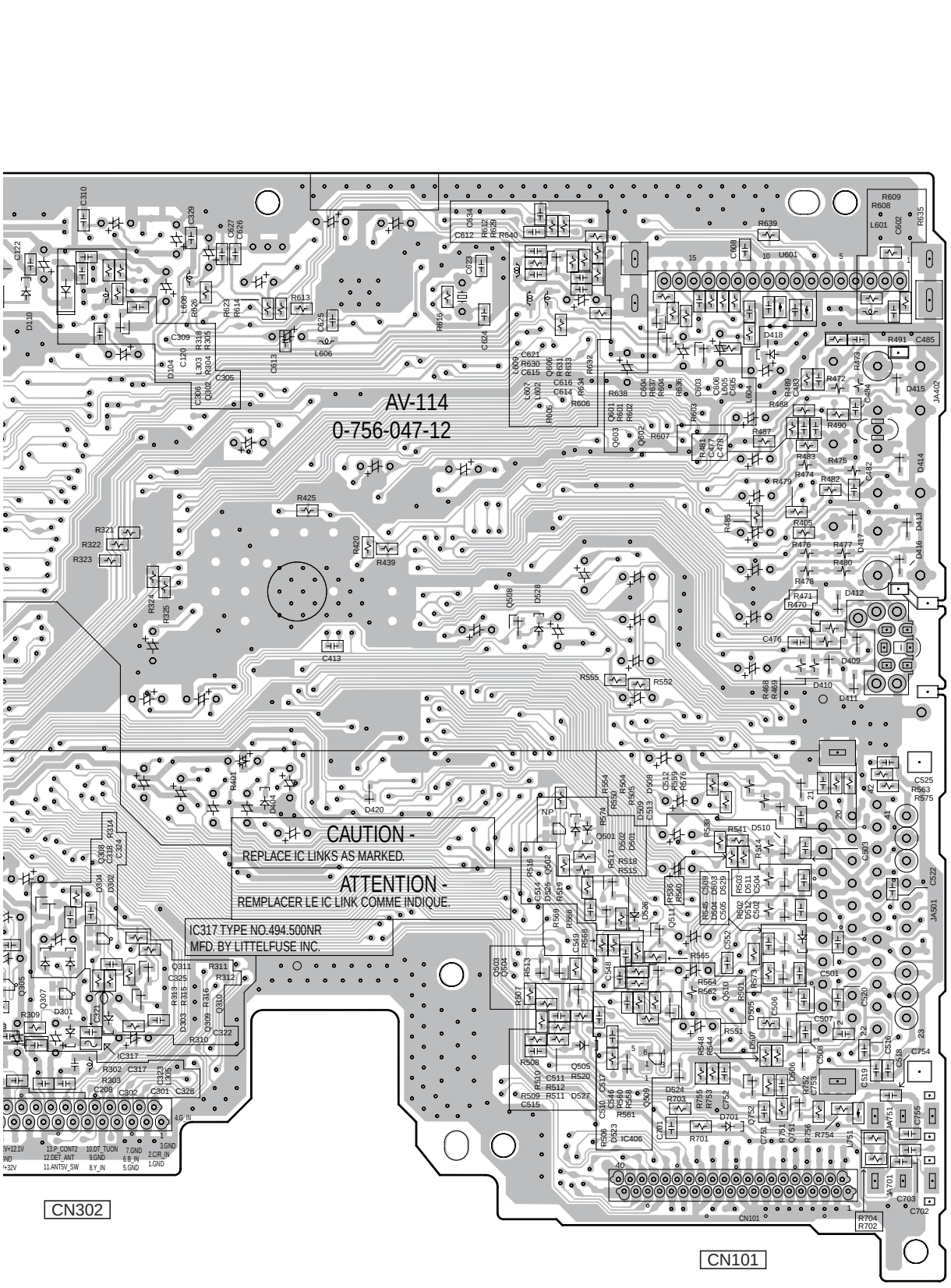
A

SIDE B

A SERVICE TUSB ASSY (VXX3229)



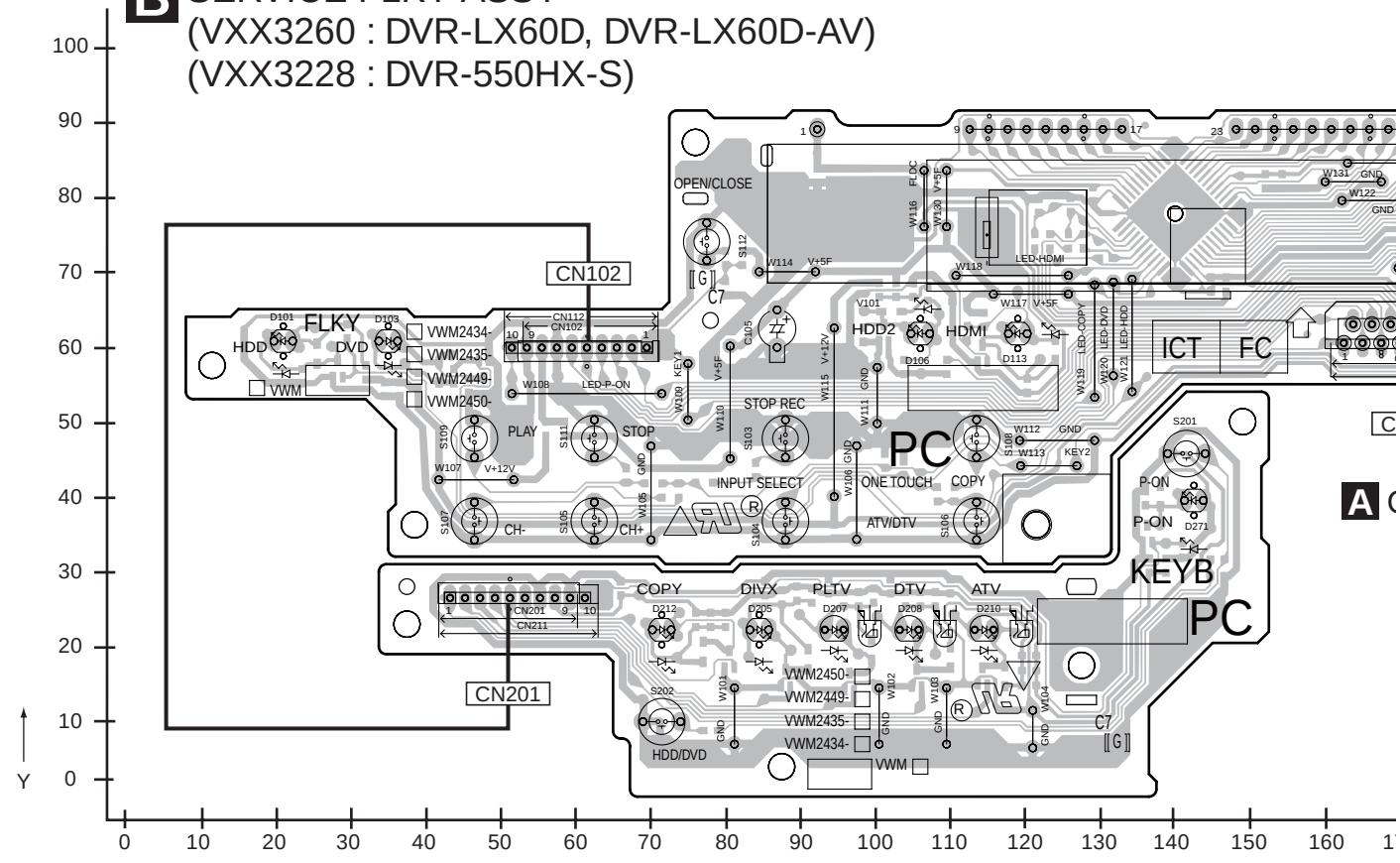
SIDE B


AV-114
0-756-047-12
CAUTION -
REPLACE IC LINKS AS MARKED.
ATTENTION -
REMPLACER LE IC LINK COMME INDIQUE.
IC317 TYPE NO.494.500NR
MFD. BY LITTELFUSE INC.
CN302
CN101
(VNP2067-B)

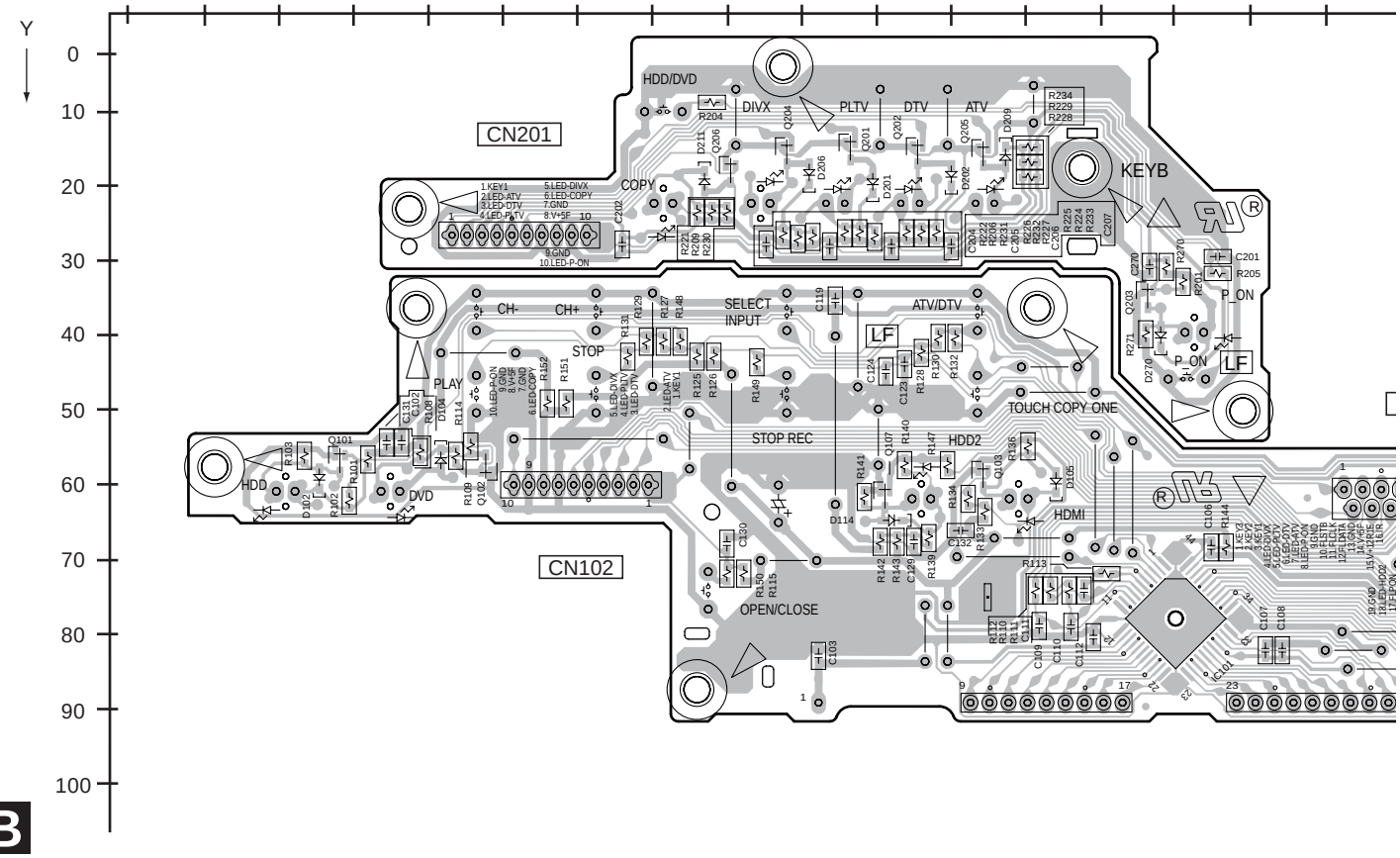
11.2 SERVICE FLKY ASSY

SIDE A

B SERVICE FLKY ASSY
(VXX3260 : DVR-LX60D, DVR-LX60D-AV)
(VXX3228 : DVR-550HX-S)

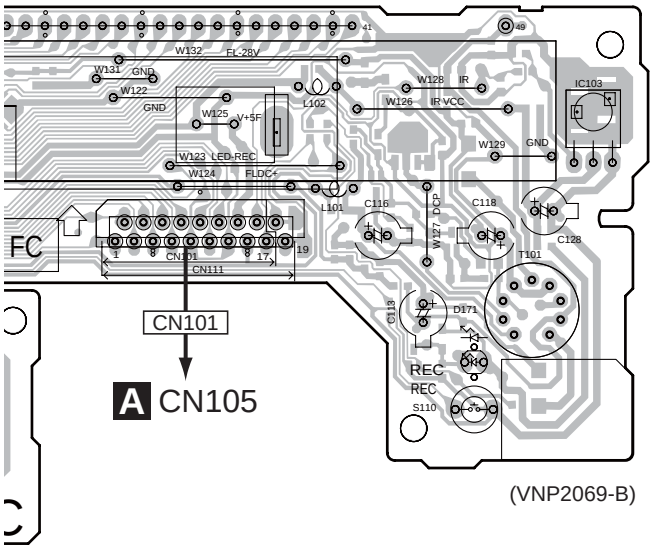


SIDE B



B

SIDE A

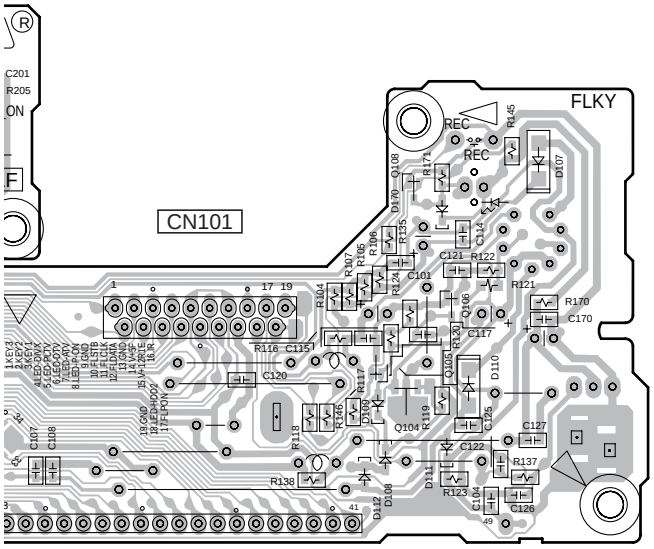


(VNP2069-B)

150 160 170 180 190 200 210 220 230 240

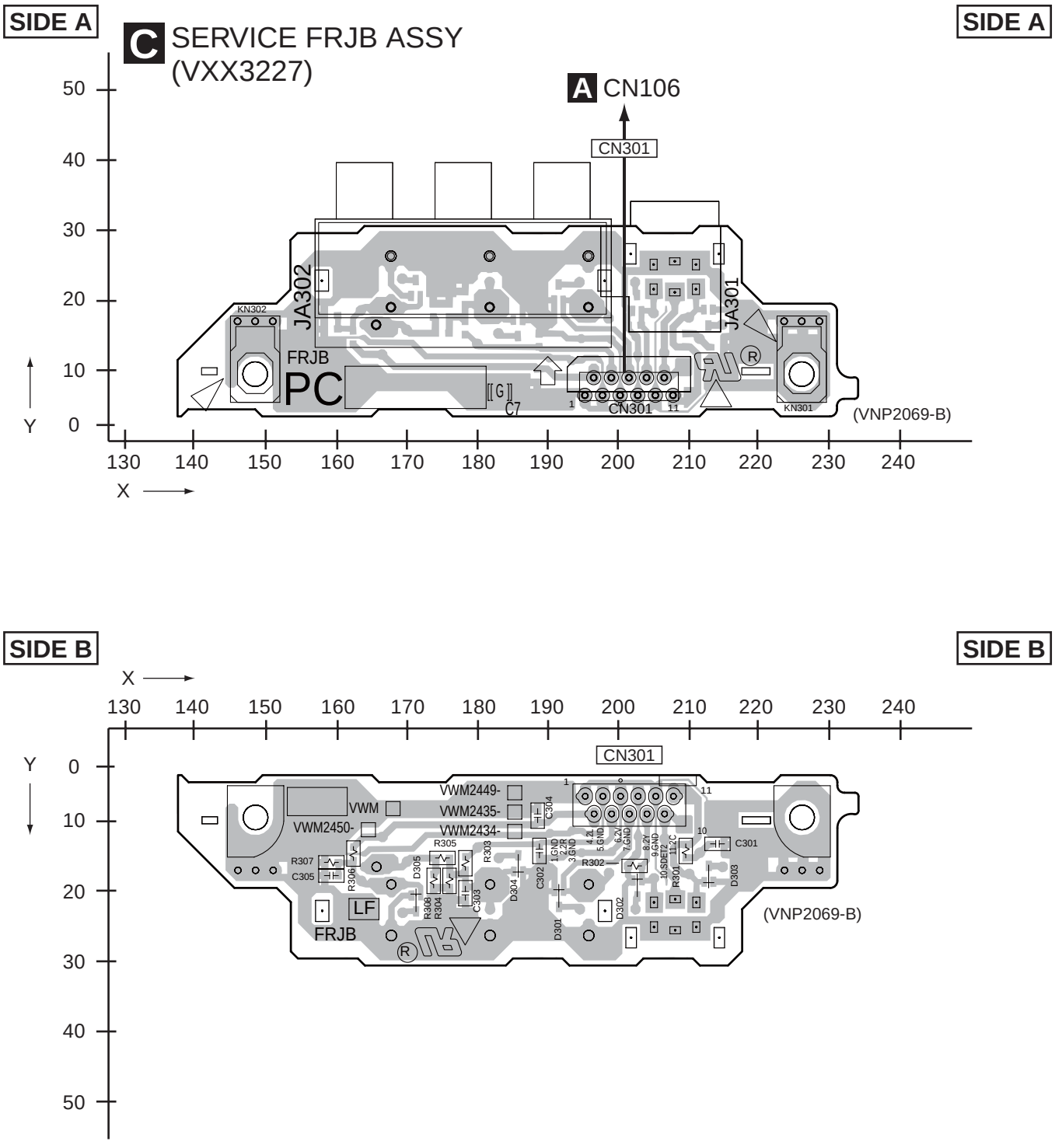
150 160 170 180 190 200 210 220 230 240

SIDE B



(VNP2069-B)

11.3 SERVICE FRJB ASSY



A

B

C

D

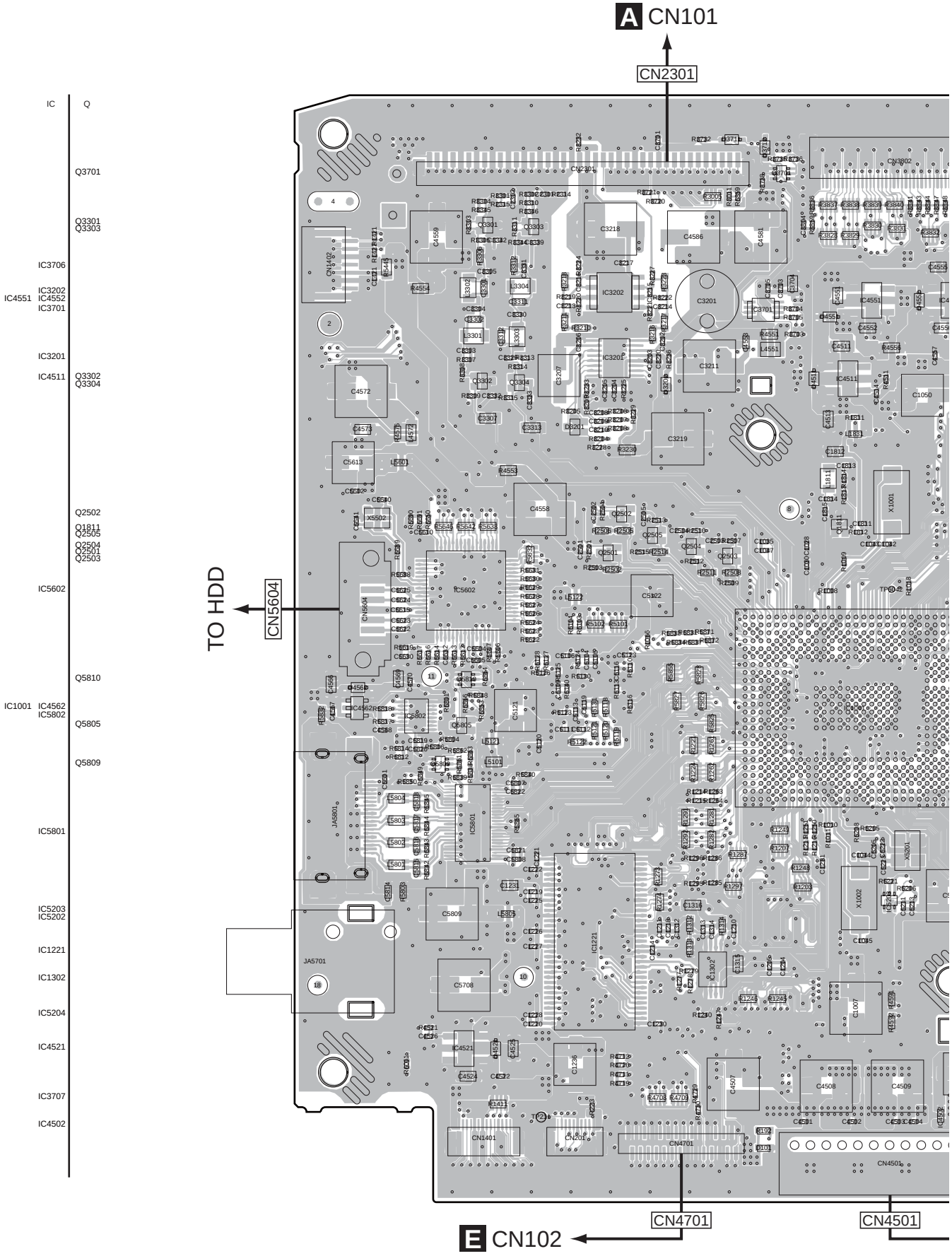
E

F

11.4 SERVICE MAIN ASSY

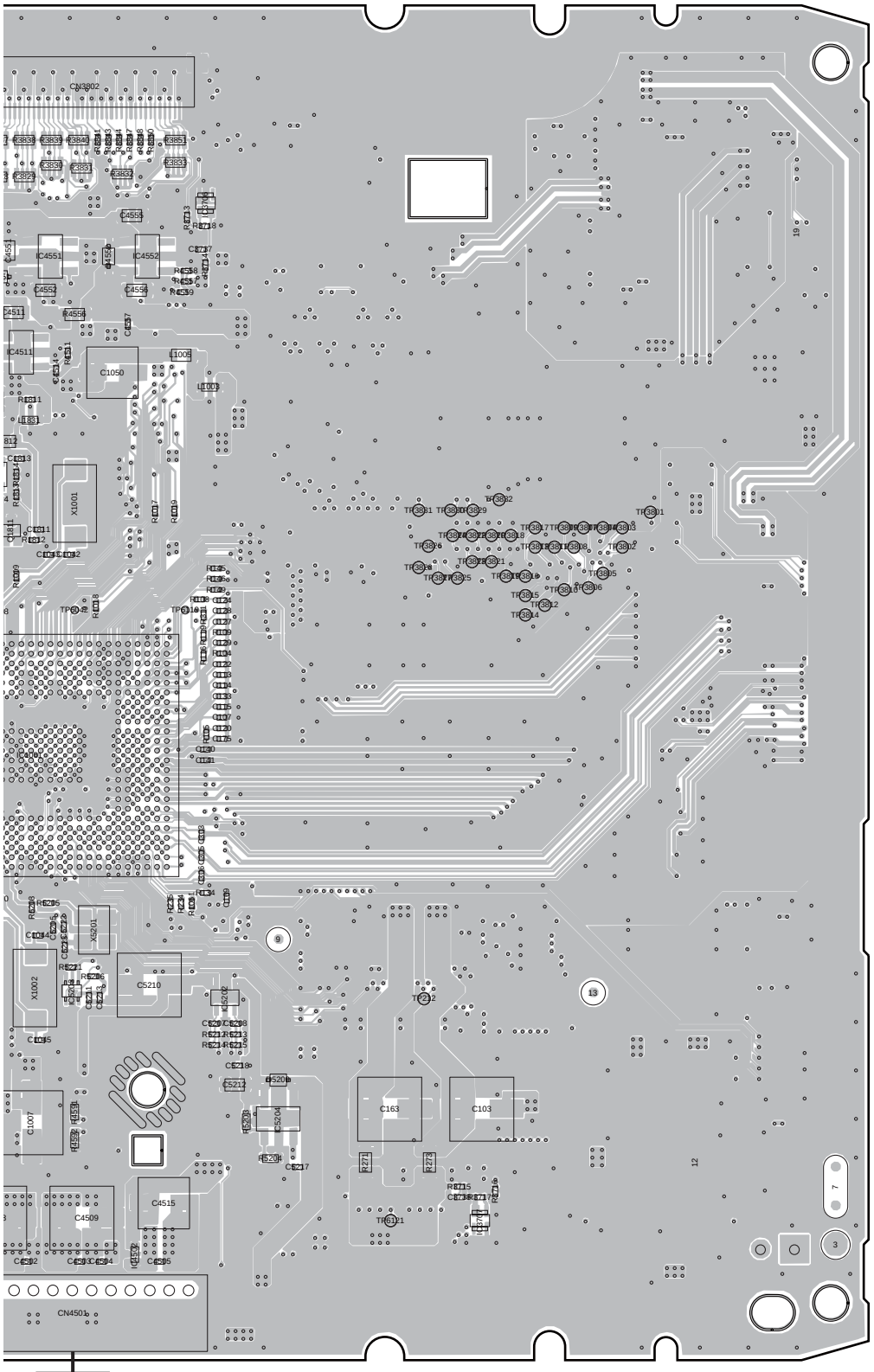
SIDE A

D SERVICE MAIN ASSY
(VXX3241)



SIDE A

A B C D E F



CN4501

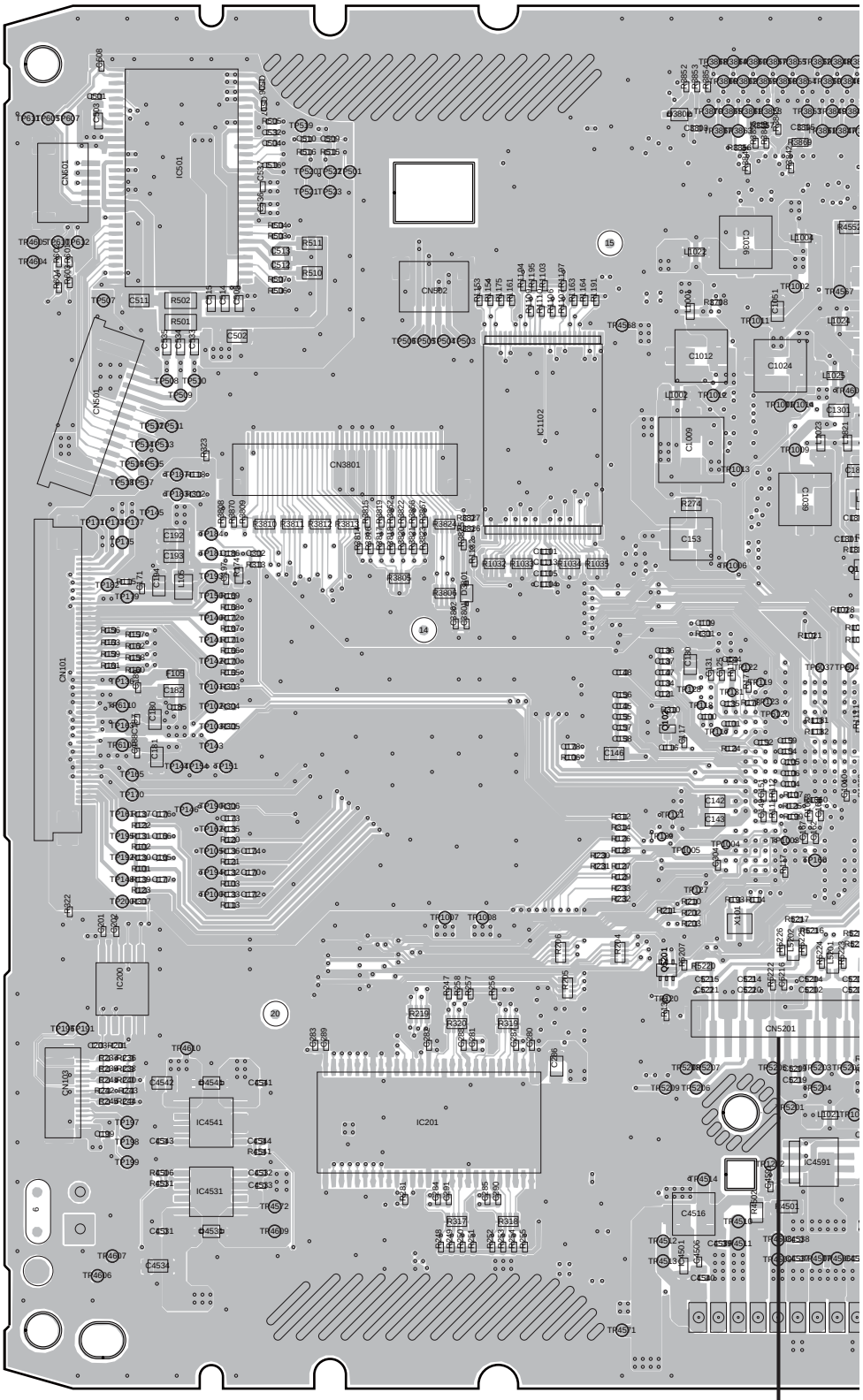
G CN201

(VNP2056-C)

SIDE B

D SERVICE MAIN ASSY (VXX3241)

IC	Q
IC3702	
	Q3305
IC501	
	Q4581
	Q3307
IC3101	
IC3203	
IC4571	
IC3102	
	Q3306
	Q3308
IC1301	
IC1102	
	Q1801
	Q102
IC5103	
IC4561	
	Q5808
	Q5801
	Q5802
	Q5804
IC200	Q5201
	Q5701
IC1201	IC5701
IC4541	IC201
IC4591	
IC4531	
IC4701	
IC4703	
IC4501	
IC4702	

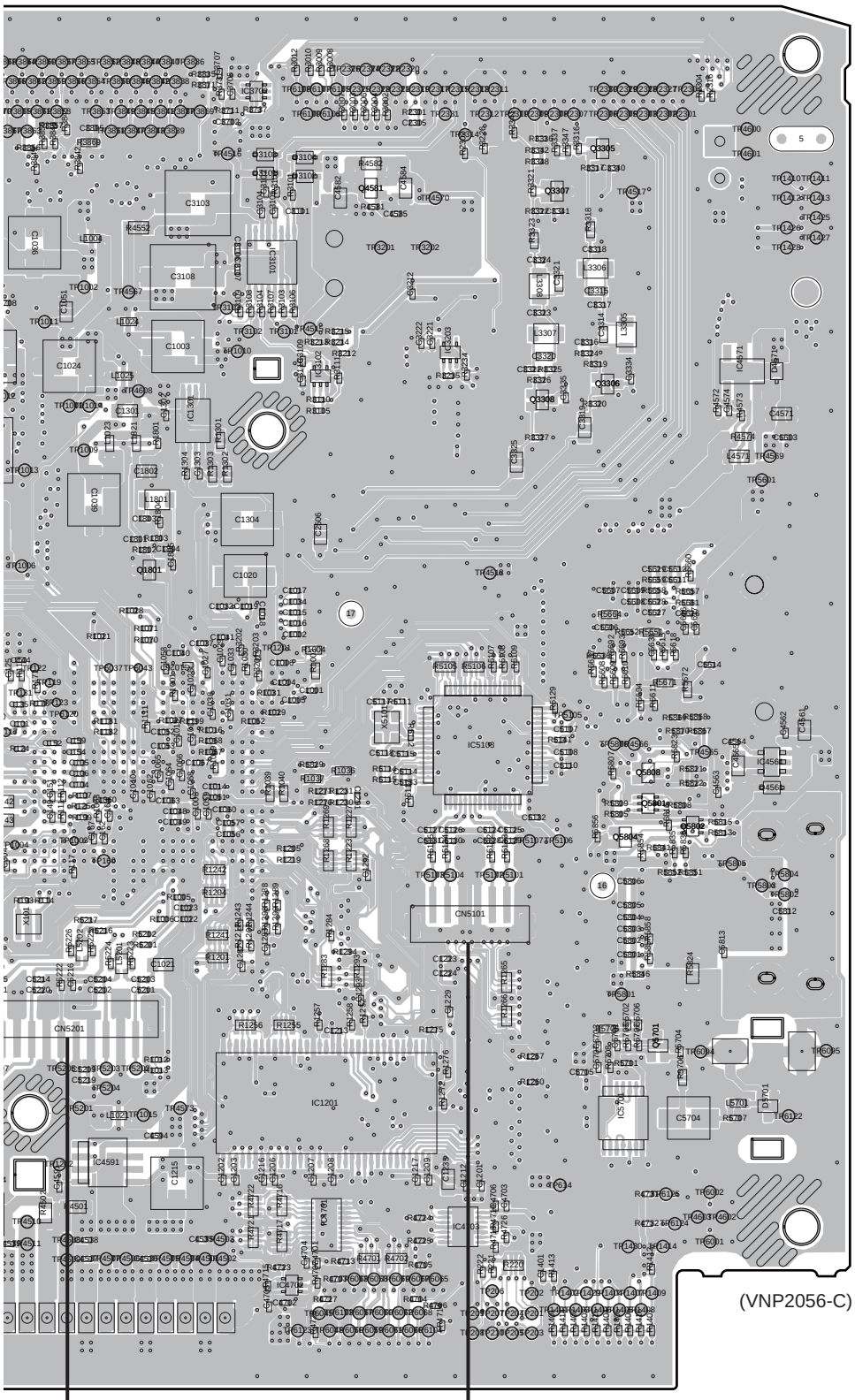


CN5201

F CN902

SIDE B

A B C D E F



(VNP2056-C)

CN5201

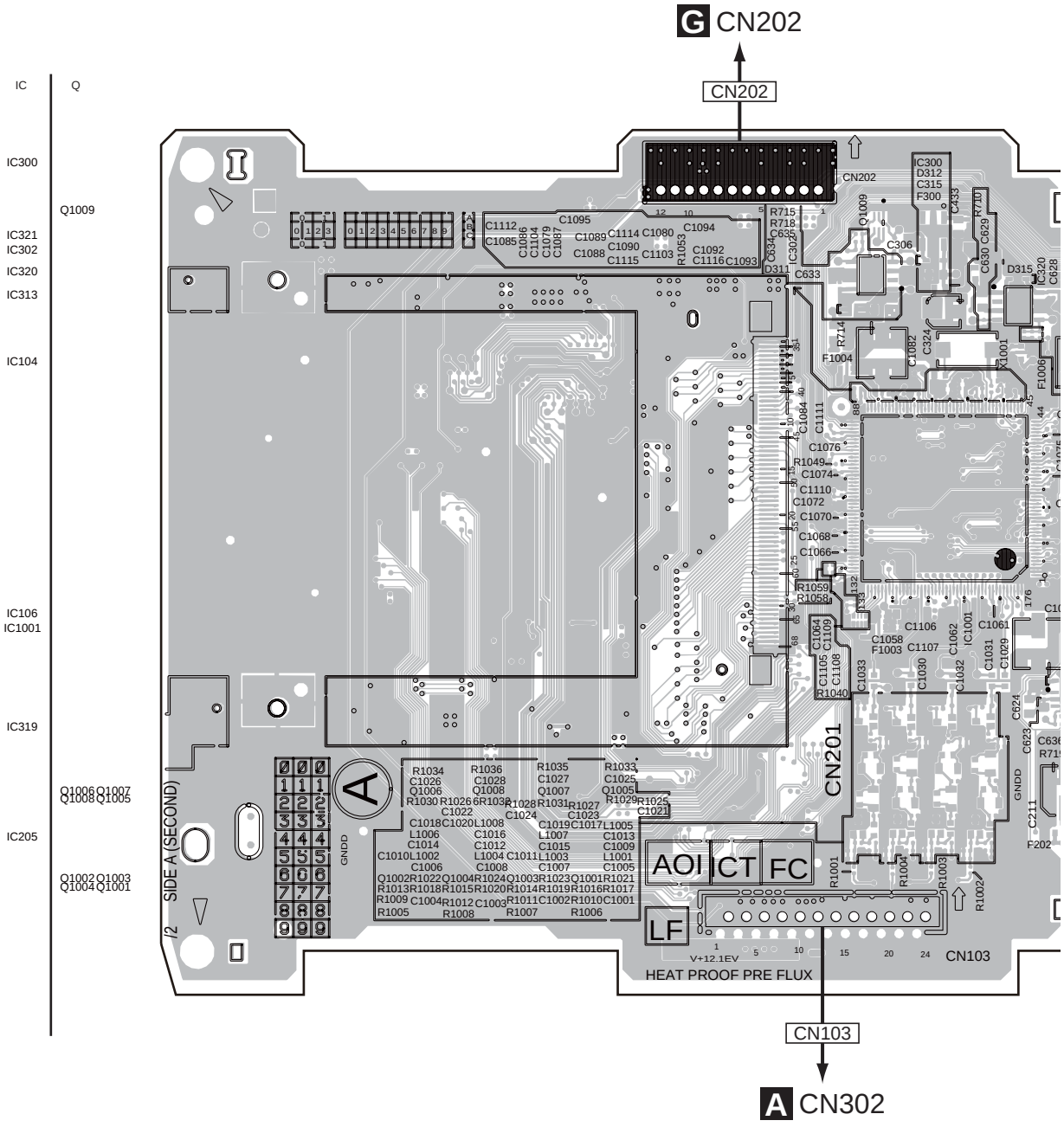
CN5101

F CN901

11.5 DTVD ASSY

SIDE A

E DTVD ASSY
(VWV2303)



SIDE A

A

B

C

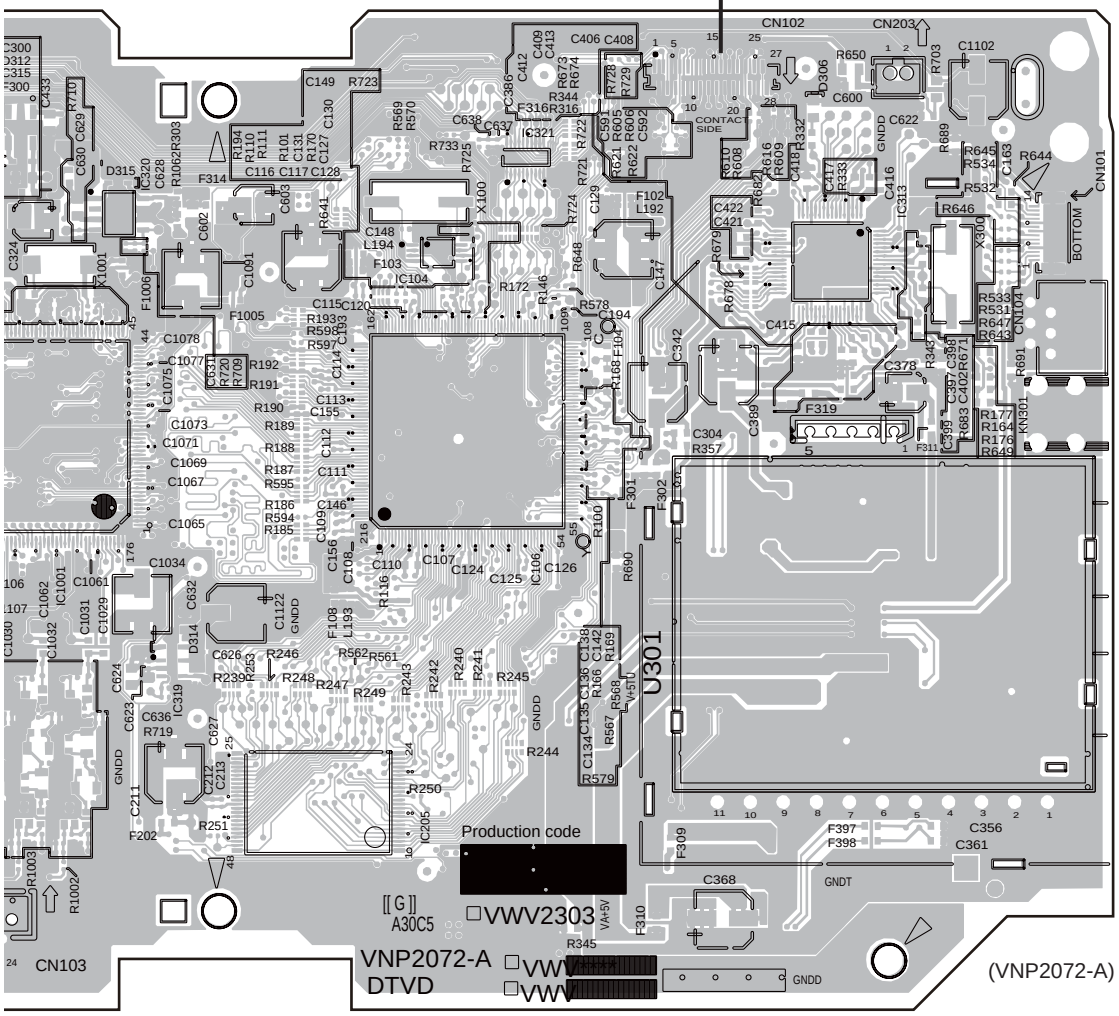
D

E

F

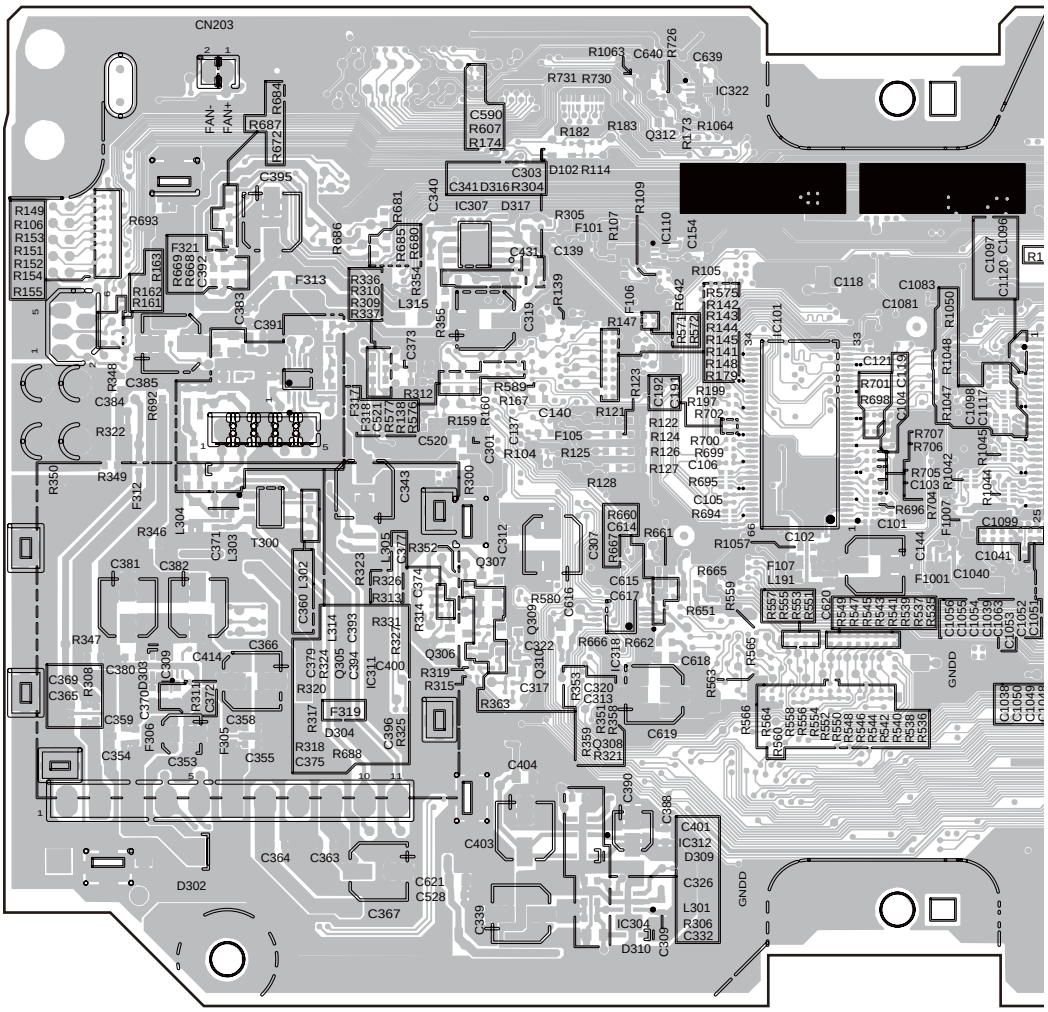
D CN4701

CN102



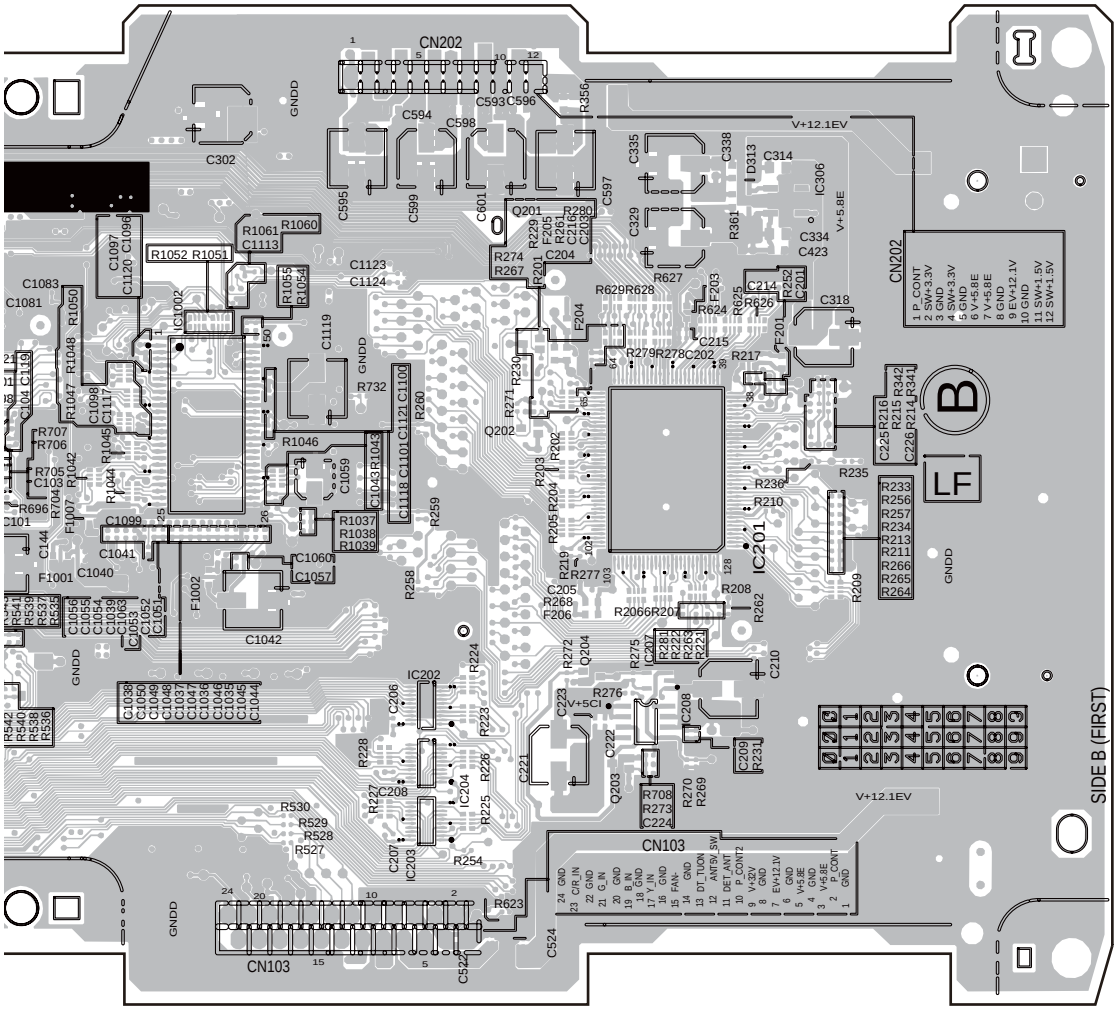
SIDE B

E DTVD ASSY (VWV2303)



SIDE B

CN202



CN103

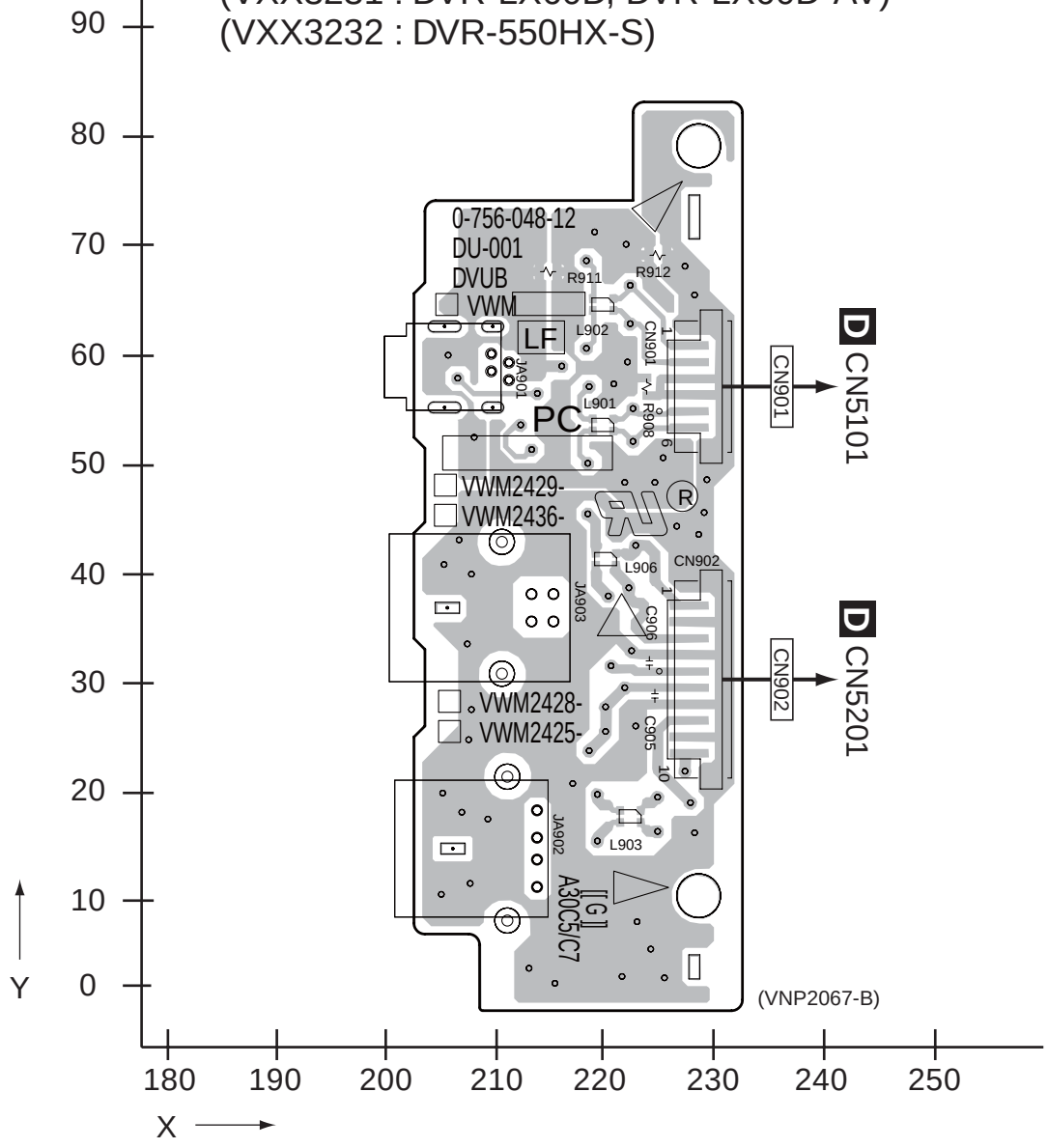
(VNP2072-A)

11.6 SERVICE DVUB ASSY

SIDE A

SIDE A

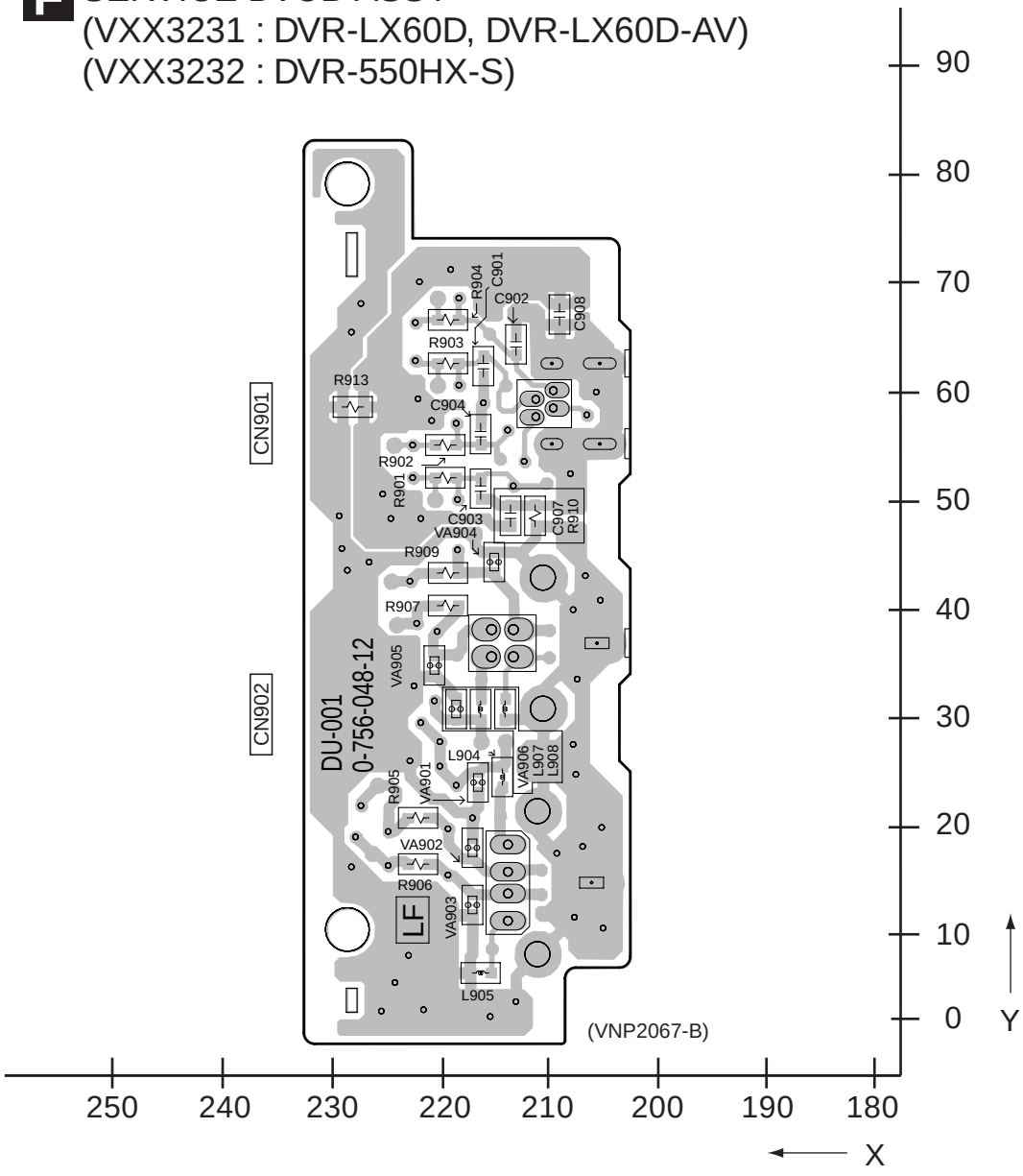
F SERVICE DVUB ASSY
(VXX3231 : DVR-LX60D, DVR-LX60D-AV)
(VXX3232 : DVR-550HX-S)



SIDE B

SIDE B

F SERVICE DVUB ASSY
(VXX3231 : DVR-LX60D, DVR-LX60D-AV)
(VXX3232 : DVR-550HX-S)



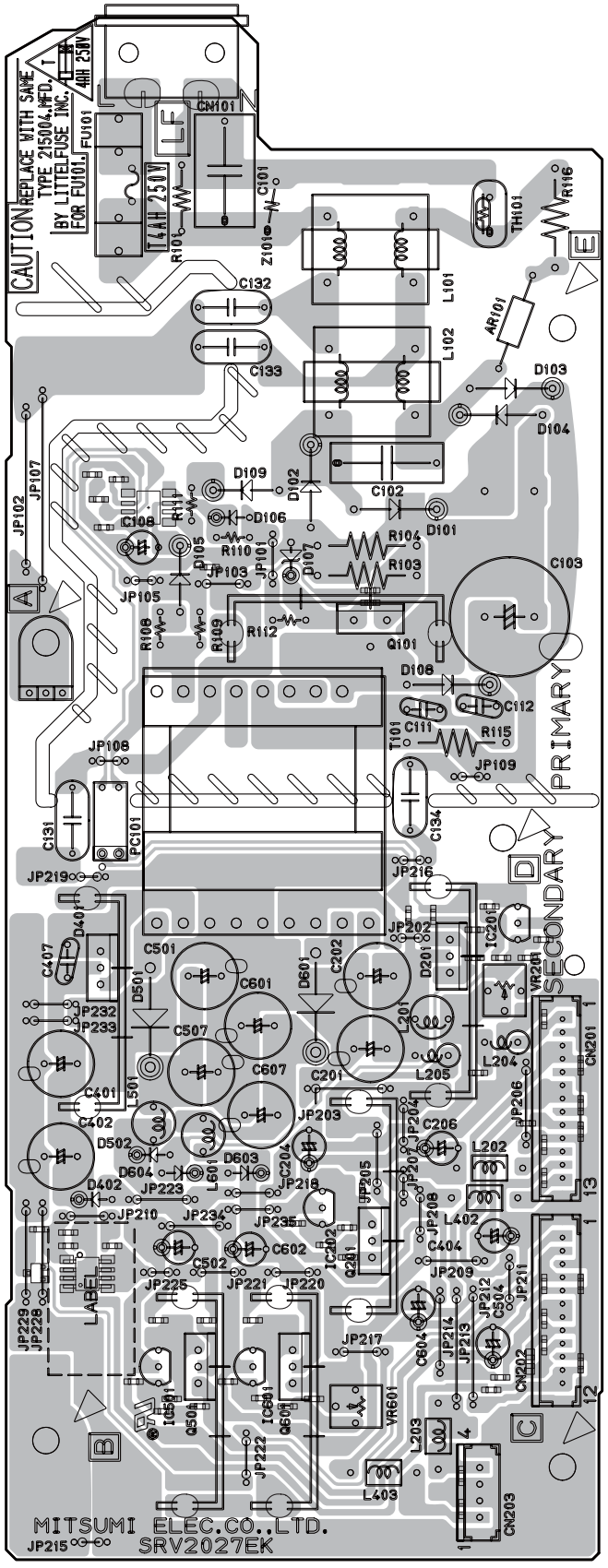
11.7 POWER SUPPLY ASSY

SIDE A

SIDE A

G POWER SUPPLY ASSY
(VWR1405)

IC Q



IC201

Q101

IC202

Q201

IC501 IC601

Q501 Q601

G

G

SIDE B

G POWER SUPPLY ASSY (VWR1405)

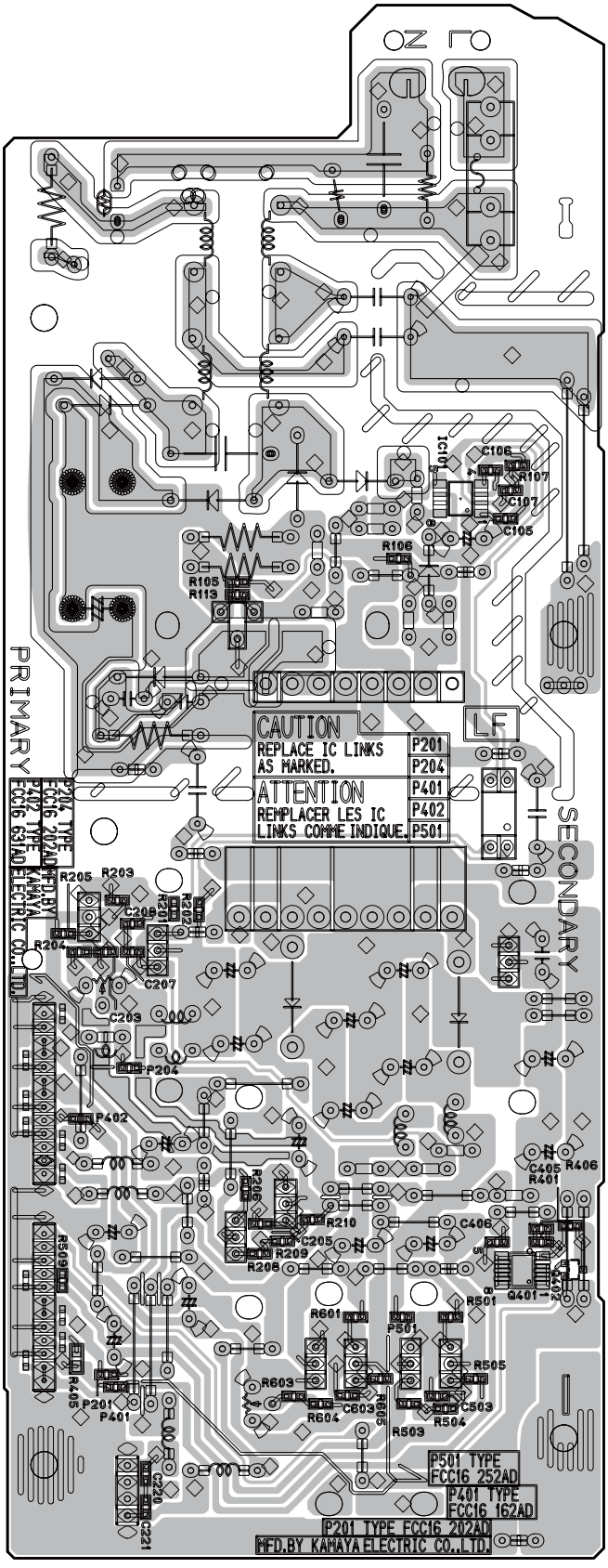
SIDE B

IC

Q

IC101

Q402
Q401



5 6 7 8

12. PCB PARTS LIST

NOTES:
- *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*

Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%).

560 Ω → 56 x 10[1] → 561 ..... RD1/4PU 5 6 1 J
47k Ω → 47 x 10[3] → 473 ..... RD1/4PU 4 7 3 J
0.5 Ω → R50 ..... RN2H R 5 0 K
1 Ω → 1R0 ..... RS1P 1 R 0 K

Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62k Ω → 562 x 10[1] → 5621 ..... RN1/4PC 5 6 2 1 F

- *Meaning of the figures and others in the parentheses in the parts list.*

Example) IC 301 is on the point (face A, 91 of x-axis, and 111 of y-axis) of the corresponding PC board.

IC 301 (A, 91, 111) IC NJM2068V

LIST OF ASSEMBLIES

Mark	No.	Description	Part No.
NSP	1..	TUJB ASSY (DVR-LX60D, DVR-LX60D-AV)	VWM2425
NSP	1..	TUJB ASSY (DVR-550HX-S)	VWM2436
	2..	SERVICE TUSB ASSY	VXX3229
	2..	SERVICE DVUB ASSY (DVR-LX60D, DVR-LX60D-AV)	VXX3231
	2..	SERVICE DVUB ASSY (DVR-550HX-S)	VXX3232
NSP	1..	FLKB ASSY (DVR-LX60D, DVR-LX60D-AV)	VWM2450
NSP	1..	FLKB ASSY (DVR-550HX-S)	VWM2435
	2..	SERVICE FLKY ASSY (DVR-LX60D, DVR-LX60D-AV)	VXX3260
	2..	SERVICE FLKY ASSY (DVR-550HX-S)	VXX3228
	3..	FLKY ASSY	
	3..	KEYB ASSY	
	2..	SERVICE FRJB ASSY	VXX3227
	1..	DTVD ASSY	VWV2303
	1..	SERVICE MAIN ASSY	VXX3241
⚠	1..	POWER SUPPLY ASSY	VWR1405

A SERVICE TUSB ASSY

MISCELLANEOUS

Mark	No.	Description	Part No.
	IC 101	(A,201,131) MICROCOMPUTER IC	PMC020B8
	IC 102	(A,225,166) RESET IC	BD4846G
	IC 103	(A,177,132) RESET IC	BU4220G
	IC 104	(A,175,152) IC	TC7MB3257FK
⚠	IC 150	(B,229,147) FUSE	CEK1278
⚠	IC 317	(B,163,48) FUSE	CEK1278
	IC 401	(A,124,124) IC FOR DVD REC	HA118326APFR
	IC 402	(A,149,100) OP-AMP IC	BA4560RF
	IC 403	(A,123,93) VIDEO SW IC	MM1503XN
	IC 406	(B,67,46) IC	TC7S66FU
	IC 601	(A,118,174) MULTI SOUND DECODER	MSP3417G
	Q 101	(A,218,157) DIGITAL TRANSISTOR	DTC124EUA
	Q 102	(A,184,154) TRANSISTOR	2SC4081
	Q 103	(A,177,121) TRANSISTOR	UMD2N
	Q 104	(A,192,110) TRANSISTOR	UMD2N
	Q 105	(A,189,109) TRANSISTOR	2SD2114K
	Q 108	(A,210,106) DIGITAL TRANSISTOR	DTC124EUA
	Q 110	(A,194,103) DIGITAL TRANSISTOR	DTA143EUA
	Q 111	(A,191,97) TRANSISTOR	2SC4081
	Q 112	(A,196,100) TRANSISTOR	2SC4081
	Q 201	(B,195,64) TRANSISTOR	2SD2114K
	Q 301	(A,155,170) TRANSISTOR	UMD2N
	Q 302	(B,158,171) TRANSISTOR	2SC4081
	Q 303	(A,153,183) TRANSISTOR	UMD2N
	Q 304	(A,159,180) TRANSISTOR	2SD2153
	Q 305	(B,177,58) TRANSISTOR	UMD2N
	Q 306	(B,184,65) TRANSISTOR	2SC2411K
	Q 307	(B,167,57) TRANSISTOR	UMD2N
	Q 308	(B,170,71) TRANSISTOR	2SC2411K
	Q 309	(B,155,55) TRANSISTOR	2SC5876
	Q 310	(B,153,60) TRANSISTOR	2SC4081
	Q 311	(B,161,66) CHIP TRANSISTOR	HN1A01FU
	Q 401	(A,143,148) DIGITAL TRANSISTOR	DTC124EUA
	Q 402	(A,109,101) TRANSISTOR	2SD2114K
	Q 403	(A,120,99) TRANSISTOR	2SA1576A
	Q 404	(A,44,147) TRANSISTOR	UMD2N
	Q 406	(A,42,137) TRANSISTOR	2SD2114K
	Q 407	(A,42,154) TRANSISTOR	2SD2114K
	Q 408	(A,110,94) TRANSISTOR	2SC4081
	Q 409	(A,116,87) TRANSISTOR	2SC4081
	Q 410	(A,115,92) TRANSISTOR	2SC4081
	Q 411	(A,110,90) TRANSISTOR	UMD2N
	Q 412	(A,122,84) DIGITAL TRANSISTOR	DTC124EUA
	Q 413	(A,117,97) DIGITAL TRANSISTOR	DTC124EUA
	Q 501	(B,84,85) TRANSISTOR	UMH1N
	Q 502	(B,75,75) TRANSISTOR	2SA1576A
	Q 503	(B,87,62) TRANSISTOR	2SC4081
	Q 504	(B,84,62) TRANSISTOR	2SC4081
	Q 505	(B,80,56) TRANSISTOR	2SC4081
	Q 506	(A,57,81) DUAL CHIP TRANSISTOR	HN1C03FU
	Q 507	(A,58,94) DUAL CHIP TRANSISTOR	HN1C03FU
	Q 508	(B,91,119) CHIP DIGITAL TRANS.	DTA124EUA
	Q 509	(B,65,55) TRANSISTOR	2SC4081
	Q 510	(B,67,60) TRANSISTOR	2SC4081
	Q 511	(B,67,67) TRANSISTOR	2SA1576A

Mark	No.	Description	Part No.
Q	601 (B,67,172)	TRANSISTOR	2SA1576A
Q	602 (B,59,165)	TRANSISTOR	2SA1576A
Q	604 (A,139,174)	TRANSISTOR	2SA1576A
Q	605 (A,139,169)	TRANSISTOR	2SA1576A
Q	606 (B,84,181)	TRANSISTOR	2SC4081
Q	751 (B,43,37)	TRANSISTOR	2SA1576A
Q	752 (B,51,41)	TRANSISTOR	2SC4081
D	101 (A,221,164)	DIODE	1SS355
D	102 (A,218,163)	DIODE	1SS355
D	103 (A,177,59)	DIODE	1SS355
D	104 (B,167,176)	DIODE	1SR154-400
D	106 (A,176,109)	DIODE	1SS355
D	108 (A,178,126)	DIODE	DAP202U
D	201 (B,188,59)	DIODE	1SS355
D	301 (B,167,50)	DIODE	UDZS15(B)
D	302 (B,167,62)	DIODE	UDZS9R1(B)
D	303 (B,160,53)	DIODE	1SS355
D	304 (B,171,62)	DIODE	1SS355
D	401 (A,135,81)	DIODE	UDZS11(B)
D	402 (A,101,150)	DIODE	UDZS6R8(B)
D	418 (B,48,165)	DIODE	1SS355
D	419 (A,44,150)	DIODE	1SS355
D	420 (B,116,91)	DIODE	DAP202U
D	501 (B,79,85)	DIODE	UDZS5R1(B)
D	502 (B,81,85)	DIODE	UDZS5R1(B)
D	503 (B,45,65)	DIODE	UMZ6R8N
D	504 (B,46,61)	DIODE	UMZ6R8N
D	505 (B,45,56)	DIODE	UMZ6R8N
D	506 (B,42,46)	DIODE	UMZ6R8N
D	507 (B,45,51)	DIODE	UMZ6R8N
D	508 (B,43,91)	DIODE	UMZ6R8N
D	509 (B,46,87)	DIODE	UMZ6R8N
D	510 (B,45,82)	DIODE	UMZ6R8N
D	511 (B,45,76)	DIODE	UMZ6R8N
D	512 (B,45,71)	DIODE	UMZ6R8N
D	513 (A,46,65)	DIODE	UMZ6R8N
D	514 (A,44,59)	DIODE	UMZ6R8N
D	515 (A,44,49)	DIODE	UMZ6R8N
D	516 (A,44,55)	DIODE	UMZ6R8N
D	517 (A,44,52)	DIODE	UMZ6R8N
D	518 (A,44,72)	DIODE	UMZ6R8N
D	519 (A,45,78)	DIODE	UMZ6R8N
D	520 (A,46,83)	DIODE	UMZ6R8N
D	521 (A,44,90)	DIODE	UMZ6R8N
D	522 (A,38,101)	DIODE	UMZ6R8N
D	523 (B,72,45)	DIODE	DAN217U
D	524 (B,63,44)	DIODE	DAN217U
D	526 (B,71,70)	DIODE	1SS355
D	527 (B,80,48)	DIODE	1SS355
D	528 (B,87,119)	DIODE	1SS355
D	701 (B,55,34)	DIODE	1SS355
L	102 (A,200,88)	AXIAL INDUCTOR	LAU470J
L	201 (A,191,57)	RADIAL INDUCTOR	ATH1109
L	303 (B,161,175)	INDUCTOR	CTF1399
L	304 (A,158,56)	RADIAL INDUCTOR	LFCA331J
L	305 (B,163,45)	INDUCTOR	CTF1399
L	401	INDUCTOR	CTF1388
L	402	INDUCTOR	CTF1388
L	403	INDUCTOR	CTF1388
L	404	INDUCTOR	CTF1388
L	405	INDUCTOR	CTF1388
L	501	INDUCTOR	CTF1388
L	502	INDUCTOR	CTF1388
L	601 (B,31,173)	INDUCTOR	CTF1399
L	602 (B,86,175)	INDUCTOR	CTF1399
L	604 (B,42,173)	INDUCTOR	CTF1306
L	605 (B,46,173)	INDUCTOR	CTF1306
L	606 (B,123,168)	INDUCTOR	CTF1399
L	607 (B,89,175)	COIL	LCYA101J2520
L	608 (B,146,178)	INDUCTOR	CTF1399
L	609 (B,91,180)	INDUCTOR	LCYA100J2520
L	751 (B,33,37)	INDUCTOR	CTF1306
JA	402 (A,17,146)	9P PIN JACK	VKB1250
JA	501 (A,18,70)	RGB CONNECTOR	VKB1249
JA	701 (A,18,25)	JACK REMOCON	RKN1004
JA	751 (A,18,36)	JACK REMOCON	RKN1004
KN	101 (A,131,184)	WRAPPING TERMINAL	VNF1084
KN	102 (A,192,46)	WRAPPING TERMINAL	VNF1084
X	101 (A,204,157)	CRYSTAL OSCILLATOR	CSS1653
X	102 (A,210,156)	CRYSTAL RESONATOR 32 KHZ	VSS1197
X	601 (A,100,173)	CERAMIC RESONATOR 18.432 MHZ	VSS1189
CN	101 (A,35,23)	40P CONNECTOR	VKN2007
CN	103 (A,235,159)	9P CONNECTOR	VKN2015
CN	105 (A,232,148)	CONNECTOR	HLEM17S-1
CN	106 (A,238,107)	CONNECTOR	HLEM11S-1
CN	302 (A,151,35)	CONNECTOR	HLEM24R-1
	401	2P 4PIN MINIDIN(S)	AKP1234
U	601 (A,26,178)	TV TUNER PACK	VXF1146

RESISTORS

R	101 (A,187,125)		RS1/16S101J
R	102 (A,182,123)		RS1/16S101J
R	103 (A,187,118)		RS1/16S101J
R	104 (A,224,158)		RS1/16S473J
R	105 (A,215,149)		RS1/16S101J
R	106 (A,221,158)		RS1/16S0R0J
R	107 (A,224,159)		RS1/16S103J
R	109 (A,212,144)		RS1/16S331J
R	110 (A,211,144)		RS1/16S101J
R	111 (A,212,149)		RS1/16S101J
R	112 (A,222,161)		RS1/16S103J
R	113 (A,219,161)		RS1/16S0R0J
R	116 (B,208,153)		RS1/16S0R0J
R	117 (A,204,145)		RS1/16S105J
R	118 (B,201,150)		RS1/16S0R0J
R	119 (A,192,167)	CARBON FILM RESISTOR	RD1/4PU153J
R	123 (A,197,149)		RS1/16S101J
R	124 (A,197,146)		RS1/16S101J
R	125 (A,196,83)		RS1/16S101J
R	126 (A,194,147)		RS1/16S101J
R	127 (A,192,151)		RS1/16S103J
R	129 (A,195,149)		RS1/16S101J
R	130 (B,235,155)		RS1/16S0R0J
R	131 (A,189,154)		RS1/16S472J
R	132 (A,190,149)		RS1/16S682J
R	134 (A,187,148)		RS1/16S102J
R	135 (A,185,152)		RS1/16S104J
R	136 (A,189,158)		RS1/16S102J
R	137 (A,186,155)		RS1/16S101J
R	138 (A,183,160)		RS1/16S471J

Mark	No.	Description	Part No.
R	139	(A,184,149)	RS1/16S682J
R	140	(A,182,148)	RS1/16S101J
R	141	(A,182,151)	RS1/16S682J
R	142	(A,181,151)	RS1/16S101J
R	143	(A,183,145)	RS1/16S101J
R	144	(A,185,139)	RS1/16S0R0J
R	145	(A,180,131)	RS1/16S103J
R	146	(A,187,126)	RS1/16S101J
R	147	(A,191,112)	RS1/16S102J
R	148	(A,184,126)	RS1/16S101J
R	149	(A,188,119)	RS1/16S0R0J
R	150	(A,190,117)	RS1/16S0R0J
R	151	(A,194,117)	RS1/16S0R0J
R	152	(A,184,127)	RS1/16S0R0J
R	153	(A,198,113)	RS1/16S101J
R	154	(B,199,113)	RS1/16S101J
R	155	(A,198,83)	RS1/16S101J
R	156	(A,201,116)	RS1/16S101J
R	157	(A,202,118)	RS1/16S104J
R	158	(A,202,119)	RS1/16S104J
R	159	(A,205,117)	RS1/16S0R0J
R	160	(A,206,114)	RS1/16S101J
R	161	(A,201,108)	RS1/16S0R0J
R	165	(A,206,117)	RS1/16S0R0J
R	167	(A,207,114)	RS1/16S101J
R	168	(A,211,112)	RS1/16S181J
R	169	(A,207,101)	RS1/16S103J
R	171	(A,215,114)	RS1/16S101J
R	172	(A,216,114)	RS1/16S101J
R	173	(A,218,113)	RS1/16S104J
R	174	(A,217,111)	RS1/16S104J
R	175	(A,219,113)	RS1/16S331J
R	176	(A,220,124)	RS1/16S102J
R	177	(A,222,126)	RS1/16S101J
R	178	(A,219,127)	RS1/16S101J
R	179	(A,222,128)	RS1/16S101J
R	180	(A,221,132)	RS1/16S101J
R	181	(A,218,133)	RS1/16S101J
R	182	(A,221,134)	RS1/16S101J
R	183	(A,218,135)	RS1/16S101J
R	184	(A,221,136)	RS1/16S101J
R	185	(A,218,137)	RS1/16S101J
R	186	(A,221,138)	RS1/16S101J
R	188	(A,221,140)	RS1/16S331J
R	189	(A,221,142)	RS1/16S471J
R	193	(B,230,171)	RS1/16S104J
R	194	(B,236,171)	RS1/16S104J
R	195	(B,228,171)	RS1/16S104J
R	196	(B,238,171)	RS1/16S101J
R	197	(A,52,22)	RS1/16S0R0J
R	199	(A,209,110)	RS1/16S101J
R	200	(A,221,144)	RS1/16S101J
R	201	(A,187,128)	RS1/16S0R0J
R	202	(A,185,137)	RS1/16S0R0J
R	203	(A,182,138)	RS1/16S0R0J
R	204	(A,182,136)	RS1/16S101J
R	205	(A,185,134)	RS1/16S101J
R	207	(A,197,104)	RS1/16S471J
R	208	(A,197,106)	RS1/16S0R0J
R	209	(A,191,101)	RS1/16S332J

Mark	No.	Description	Part No.
R	210	(A,197,108)	RS1/16S8200F
R	214	(A,189,93)	RS1/16S332J
R	215	(A,192,93)	RS1/16S681J
R	216	(A,193,95) CHIP RESISTOR	RS1/16S7500F
R	217	(A,196,93)	RS1/16S102J
R	218	(A,177,56)	RS1/10S0R0J
R	219	(B,190,74)	RS1/16S332J
R	220	(B,193,71)	RS1/16S222J
R	221	(A,178,145)	RS1/16S101J
R	222	(A,184,140)	RS1/16S0R0J
R	223	(A,174,157)	RS1/16S101J
R	224	(A,177,156)	RS1/16S101J
R	228	(A,196,160)	RS1/16S0R0J
R	233	(B,219,89)	RS1/16S104J
R	251	(B,184,44)	RS1/10S0R0J
R	301	(A,143,80)	RS1/10S0R0J
R	302	(B,179,47)	RS1/10S0R0J
R	303	(B,179,45)	RS1/10S0R0J
R	304	(B,159,176)	RS1/16S101J
R	305	(B,158,180)	RS1/16S330J
R	306	(B,179,55)	RS1/16S330J
R	307	(A,160,83)	RS1/10S0R0J
R	308	(A,162,83)	RS1/10S0R0J
R	309	(B,173,51)	RS1/16S152J
R	310	(B,156,51)	RS1/16S472J
R	311	(B,155,66)	RS1/16S821J
R	312	(B,153,64)	RS1/16S103J
R	313	(B,162,59)	RS1/16S184J
R	314	(B,166,73)	RS1/16S223J
R	315	(B,160,59)	RS1/16S1003F
R	316	(B,157,60)	RS1/16S2202F
R	318	(B,160,180)	RS1/16S0R0J
R	401	(B,137,96)	RS1/10S0R0J
R	402	(A,138,102)	RS1/16S561J
R	403	(A,136,103)	RS1/16S561J
R	404	(A,133,89)	RS1/10S0R0J
R	407	(A,97,126)	RS1/10S0R0J
R	408	(A,148,115)	RS1/16S471J
R	410	(A,150,110)	RS1/16S471J
R	412	(A,148,112)	RS1/16S471J
R	413	(A,148,119)	RS1/16S471J
R	414	(A,145,124)	RS1/16S471J
R	415	(A,145,126)	RS1/16S471J
R	416	(A,146,127)	RS1/16S471J
R	417	(A,146,129)	RS1/16S471J
R	418	(A,146,131)	RS1/16S471J
R	419	(A,146,133)	RS1/16S471J
R	420	(B,116,133) CHIP RESISTOR	RS1/16S335J
R	421	(A,124,136) CHIP RESISTOR	RS1/16S335J
R	422	(A,140,113)	RS1/16S103J
R	425	(B,126,139)	RS1/16S104J
R	428	(A,129,139)	RS1/16S0R0J
R	430	(A,133,140)	RS1/16S105J
R	431	(A,124,141)	RS1/16S105J
R	432	(A,122,144)	RS1/16S105J
R	433	(A,106,110)	RS1/16S105J
R	435	(A,105,115)	RS1/16S105J
R	436	(A,94,132)	RS1/16S101J
R	437	(A,96,132)	RS1/16S101J
R	438	(A,96,143)	RS1/10S0R0J

Mark	No.	Description	Part No.
R	439 (B,113,132)		RS1/16S185J
R	440 (A,116,85)		RS1/16S471J
R	444 (A,130,147)		RS1/10S75R0F
R	445 (A,133,146)		RS1/10S75R0F
R	447 (A,122,149)		RS1/10S75R0F
R	448 (A,100,142)		RS1/10S0R0J
R	449 (A,108,147)		RS1/10S75R0F
R	453 (A,155,102)		RS1/16S8201F
R	454 (A,136,109)		RS1/16S1002F
R	455 (A,121,103)		RS1/16S470J
R	458 (A,121,109)		RS1/16S471J
R	459 (A,124,100)		RS1/10S75R0F
R	461 (A,115,95)		RS1/16S681J
R	462 (A,138,107)		RS1/16S1002F
R	463 (A,143,102)		RS1/16S8201F
R	465 (A,116,100)		RS1/16S471J
R	466 (A,113,82)		RS1/10S75R0F
R	468 (B,43,113)	CHIP TYPE RESISTOR	RS1/10S68R0F
R	469 (B,40,113)		RS1/10S3R9J
R	470 (B,38,117)	CHIP TYPE RESISTOR	RS1/10S68R0F
R	471 (B,37,119)		RS1/10S3R9J
R	472 (B,36,160)	CHIP TYPE RESISTOR	RS1/10S68R0F
R	473 (B,33,160)		RS1/10S3R9J
R	474 (B,42,147)	CHIP TYPE RESISTOR	RS1/10S68R0F
R	475 (B,34,146)		RS1/10S3R9J
R	476 (B,42,132)	CHIP TYPE RESISTOR	RS1/10S68R0F
R	477 (B,35,132)		RS1/10S3R9J
R	478 (B,42,129)	CHIP TYPE RESISTOR	RS1/10S68R0F
R	479 (B,43,139)		RS1/16S471J
R	480 (B,35,129)		RS1/10S3R9J
R	481 (B,44,153)		RS1/16S104J
R	484 (A,40,141)		RS1/16S102J
R	485 (B,50,138)		RS1/16S223J
R	486 (A,41,149)		RS1/16S102J
R	487 (B,49,151)		RS1/16S223J
R	488 (B,42,156)		RS1/16S471J
R	489 (B,42,161)		RS1/16S104J
R	498 (A,120,84)		RS1/16S223J
R	499 (A,118,82)		RS1/16S223J
R	501 (B,61,57)		RS1/10S75R0F
R	502 (B,48,71)		RS1/10S75R0F
R	503 (B,48,76)		RS1/10S75R0F
R	504 (B,51,92)	CHIP TYPE RESISTOR	RS1/10S68R0F
R	505 (B,49,90)		RS1/10S3R9J
R	506 (B,75,46)		RS1/16S0R0J
R	507 (B,89,57)		RS1/16S472J
R	508 (B,86,55)		RS1/16S473J
R	509 (B,88,49)		RS1/16S273J
R	510 (B,87,52)		RS1/16S225J
R	511 (B,84,49)		RS1/16S224J
R	512 (B,84,51)		RS1/16S104J
R	513 (B,81,61)		RS1/16S104J
R	514 (B,48,82)		RS1/10S75R0F
R	515 (B,80,78)		RS1/10S561J
R	516 (B,79,75)		RS1/16S122J
R	517 (B,83,79)		RS1/16S152J
R	518 (B,79,80)		RS1/16S100J
R	519 (B,73,70)		RS1/16S563J
R	520 (B,80,53)		RS1/16S221J
R	521 (A,48,68)	CHIP TYPE RESISTOR	RS1/10S68R0F
R	522 (A,44,61)		RS1/10S3R9J
R	523 (A,45,69)	CHIP TYPE RESISTOR	RS1/10S68R0F
R	524 (A,43,69)		RS1/10S3R9J
R	525 (A,48,79)	CHIP TYPE RESISTOR	RS1/10S68R0F
R	526 (A,44,75)		RS1/10S3R9J
R	527 (A,47,87)		RS1/10S0R0J
R	528 (A,45,87)		RS1/10S75R0F
R	529 (A,43,81)		RS1/16S104J
R	530 (A,44,95)	CHIP TYPE RESISTOR	RS1/10S68R0F
R	531 (A,44,93)		RS1/10S3R9J
R	532 (A,119,151)		RS1/10S75R0F
R	534 (A,58,76)		RS1/16S392J
R	535 (A,58,85)		RS1/16S392J
R	536 (B,54,80)		RS1/16S471J
R	537 (A,48,52)		RS1/16S101J
R	538 (B,56,83)		RS1/16S471J
R	539 (A,48,49)		RS1/16S101J
R	540 (B,52,80)		RS1/16S104J
R	541 (B,53,83)		RS1/16S104J
R	542 (A,47,55)		RS1/16S101J
R	543 (A,47,59)		RS1/16S101J
R	544 (B,47,46)		RS1/16S101J
R	545 (B,48,60)		RS1/16S101J
R	546 (A,51,68)		RS1/16S104J
R	547 (A,51,70)		RS1/16S104J
R	548 (B,49,46)		RS1/16S104J
R	549 (A,58,64)		RS1/16S104J
R	550 (B,55,89)		RS1/16S471J
R	551 (B,48,52)		RS1/16S101J
R	552 (B,70,109)		RS1/16S471J
R	553 (A,50,60)		RS1/16S101J
R	554 (B,58,92)		RS1/16S104J
R	555 (B,74,110)		RS1/16S104J
R	556 (A,56,97)		RS1/16S392J
R	557 (A,55,90)		RS1/16S392J
R	558 (B,67,55)		RS1/16S103J
R	559 (B,37,93)		RS1/16S0R0J
R	560 (B,70,55)		RS1/16S153J
R	561 (B,69,53)		RS1/16S681J
R	562 (B,70,59)		RS1/16S103J
R	563 (B,29,94)		RS1/16S0R0J
R	564 (B,70,61)		RS1/16S153J
R	565 (B,67,63)		RS1/16S681J
R	566 (B,74,65)		RS1/16S223J
R	568 (B,70,64)		RS1/16S123J
R	569 (B,76,65)		RS1/16S102J
R	571 (A,125,149)		RS1/10S75R0F
R	573 (B,51,64)		RS1/16S0R0J
R	574 (B,83,90)		RS1/16S0R0J
R	602 (B,62,172)		RS1/16S102J
R	603 (B,51,169)		RS1/16S0R0J
R	605 (B,83,170)		RS1/16S103J
R	606 (B,77,172)		RS1/16S103J
R	607 (B,55,166)		RS1/16S102J
R	608 (B,31,175)		RS1/16S0R0J
R	609 (B,27,183)		RS1/16S0R0J
R	616 (B,103,175)		RS1/16S0R0J
R	619 (A,106,170)		RS1/16S103J
R	620 (A,126,163)		RS1/16S0R0J
R	621 (A,109,162)		RS1/16S101J

Mark	No.	Description	Part No.
R	622 (A,109,160)		RS1/16S101J
R	623 (B,133,173)		RS1/16S102J
R	624 (A,132,174)		RS1/16S332J
R	625 (A,137,181)		RS1/16S332J
R	626 (B,144,176)		RS1/16S102J
R	627 (A,130,173)		RS1/16S332J
R	628 (A,133,171)		RS1/16S332J
R	630 (B,88,181)		RS1/16S331J
R	631 (B,81,181)		RS1/16S472J
R	632 (B,77,183)		RS1/16S220J
R	633 (B,79,181)		RS1/16S101J
R	634 (B,77,179)		RS1/16S222J
R	635 (B,25,174)		RS1/16S0R0J
R	636 (B,54,174)		RS1/16S0R0J
R	637 (B,58,174)		RS1/16S0R0J
R	638 (B,66,175)		RS1/16S0R0J
R	701 (B,60,34)		RS1/16S224J
R	702 (B,30,29)		RS1/16S221J
R	704 (B,30,32)		RS1/16S221J
R	751 (B,46,37)		RS1/16S102J
R	752 (B,48,41)		RS1/16S472J
R	753 (B,58,43)		RS1/16S472J
R	754 (B,36,37)		RS1/16S151J
R	755 (B,60,43)		RS1/16S472J
R	756 (B,40,37)		RS1/16S102J

CAPACITORS

C	104 (A,216,147)		CEAT220M25
C	105 (A,223,156)		CKSRYF104Z25
C	106 (A,226,169)		CKSRYF104Z25
C	107 (A,209,144)		CCSRCH331J50
C	109 (A,218,155)		CKSRYF104Z25
C	110 (A,219,164)		CKSRYB105K10
C	111 (B,214,159)		CCSRCH120J50
C	112 (B,210,159)		CCSRCH120J50
C	113 (A,201,145)		CKSRYF105Z10
C	114 (B,201,158)		CCSRCH150J50
C	115 (B,200,153)		CCSRCH150J50
C	119 (A,189,183)	ELECT. CAPACITOR	CEAT102M6R3
C	120 (B,165,179)		CKSRYF104Z25
C	121 (B,237,153)		CKSRYF105Z10
C	122 (B,173,181)		CKSRYF105Z10
C	123 (A,171,178)	ELECT. CAPACITOR	CEAT471M6R3
C	124 (A,189,152)		CKSRYF104Z25
C	125 (A,182,154)		CKSRYF104Z25
C	126 (A,187,132)		CKSRYF104Z25
C	127 (A,178,114)		CEAT101M16
C	131 (A,192,119)		CKSRYF104Z25
C	132 (A,193,116)		CKSRYF104Z25
C	133 (A,197,109)		CKSRYF104Z25
C	134 (A,203,106)		CKSRYF104Z25
C	135 (A,208,104)		CKSRYF104Z25
C	136 (A,213,121)		CKSRYF105Z10
C	138 (A,221,119)		CEAT2R2M50
C	139 (A,216,126)		CKSRYF104Z25
C	140 (A,216,130)		CKSRYF104Z25
C	141 (A,172,157)		CKSRYF105Z10
C	142 (A,172,159)		CCSRCH102J50
C	147 (B,231,159)		CKSRYF104Z25
C	149 (A,197,103)		CCSRCH100D50
C	150 (A,190,93)		CKSRYF105Z10
C	152 (A,196,97)		CKSRYF105Z10
C	154 (B,229,143)		CKSRYF104Z25
C	155 (B,239,153)		CCSRCH102J50
C	156 (A,175,135)		CKSRYF104Z25
C	157 (A,175,129)		CKSRYB104K16
C	202 (A,194,65)		CKSRYF104Z25
C	204 (A,190,69)		CEAT101M16
C	205 (A,184,54)		CEAT220M25
C	206 (B,192,74)		CCSRCH471J50
C	207 (A,190,88)		CKSRYF104Z25
C	208 (B,180,42)		CKSRYB104K16
C	301 (B,171,42)		CKSRYF104Z25
C	302 (B,176,42)		CKSRYF104Z25
C	303 (A,169,47)		CEAT101M16
C	304 (A,176,47)		CEAT101M16
C	305 (B,155,173)		CKSRYF104Z25
C	306 (B,162,169)		CKSRYF104Z25
C	307 (A,155,165)		CEAT101M16
C	308 (A,150,174)		CEAT101M16
C	309 (B,164,182)		CKSRYF104Z25
C	310 (B,164,188)		CKSRYF104Z25
C	311 (A,161,188)		CEAT221M16
C	312 (A,149,182)		CEAT101M16
C	313 (B,177,50)		CKSRYF105Z10
C	314 (B,177,65)		CKSRYF104Z25
C	315 (A,180,63)		CEAT101M16
C	316 (A,180,70)		CEAT101M16
C	317 (B,172,48)		CKSRYF104Z25
C	318 (B,167,70)		CKSRYF104Z25
C	319 (A,171,66)		CEAT101M16
C	320 (A,172,76)		CEAT101M16
C	321 (B,163,50)		CKSRYF104Z25
C	322 (B,152,52)		CCSRCH101J50
C	323 (B,166,45)	CERAMIC CAPACITOR	CKSQYF105Z50
C	324 (B,163,71)		CKSRYF104Z25
C	326 (A,158,49)		CEAT100M50
C	328 (B,168,42)		CKSRYF104Z50
C	329 (B,146,185)		CKSRYF104Z25
C	401 (A,131,111)		CKSRYF105Z10
C	402 (A,138,104)		CCSRCH101J50
C	403 (A,134,105)		CCSRCH101J50
C	404 (A,123,112)		CKSRYF105Z10
C	405 (A,117,82)		CKSRYB103K50
C	406 (A,117,108)		CKSRYB104K16
C	407 (A,115,108)		CKSRYB105K10
C	408 (A,112,108)		CKSRYB105K10
C	409 (A,111,108)		CKSRYB105K10
C	410 (A,109,108)		CKSRYB105K10
C	411 (A,145,114)		CKSRYB105K10
C	412 (A,144,119)		CKSRYB105K10
C	413 (B,122,116)		CKSRYB104K16
C	414 (A,137,113)		CKSRYF104Z25
C	415 (A,139,113)		CKSRYF104Z25
C	416 (A,147,110)		CKSRYB105K10
C	417 (A,145,112)		CKSRYB105K10
C	418 (A,143,121)		CKSRYF105Z10
C	419 (A,142,124)		CKSRYB105K10
C	420 (A,142,126)		CKSRYB105K10
C	421 (A,143,127)		CKSRYB105K10

Mark	No.	Description	Part No.
C	422	(A,143,129)	CKSRYB105K10
C	423	(A,143,131)	CKSRYB105K10
C	424	(A,143,133)	CKSRYB105K10
C	428	(A,125,137)	CKSRYB104K16
C	431	(A,131,142)	CKSRYB104K16
C	432	(A,126,140)	CKSRYB105K10
C	433	(A,110,144)	CKSRYB105K10
C	434	(A,120,136)	CKSRYB104K16
C	435	(A,102,110)	CKSRYB105K10
C	436	(A,102,112)	CKSRYB105K10
C	437	(A,102,114)	CKSRYB105K10
C	438	(A,108,117)	CKSRYF105Z10
C	439	(A,106,130)	CKSRYB104K16
C	440	(A,117,137)	CKSRYB104K16
C	441	(A,111,140)	CKSRYF105Z10
C	442	(A,111,136)	CKSRYF104Z25
C	443	(A,133,142)	CKSRYB105K10
C	444	(A,124,144)	CKSRYB105K10
C	445	(A,114,152)	CKSRYB105K10
C	446	(A,120,144)	CKSRYB105K10
C	447	(A,130,150)	CKSRYB103K50
C	450	(A,142,91)	CEANP4R7M50
C	451	(A,137,91)	CEANP4R7M50
C	452	(A,129,95)	CEAT101M10
C	453	(A,135,96)	CEAT101M10
C	454	(A,100,119)	CEAT101M10
C	455	(A,153,118)	CEAT4R7M50
C	456	(A,139,150)	CEAT1R0M50
C	457	(A,117,146)	CEAT100M50
C	458	(A,97,146)	CEAT101M10
C	459	(A,125,102)	CKSRYF105Z10
C	460	(A,120,111)	CKSRYB105K10
C	461	(A,125,97)	CKSRYB105K10
C	462	(A,126,92)	CKSRYF105Z10
C	464	(A,147,97)	CKSRYF104Z25
C	465	(A,112,87)	CKSRYF104Z25
C	466	(A,118,90)	CCSRCH102J50
C	467	(A,121,87)	CKSRYF105Z10
C	470	(A,113,84)	CKSRYB104K16
C	471	(A,151,107)	CEAT100M50
C	472	(A,154,95)	CEAT100M50
C	473	(A,131,84)	CEAT101M16
C	474	(A,142,107)	CEAT100M50
C	475	(A,148,93)	CEAT100M50
C	476	(B,43,116)	CKSRYB103K50
C	477	(B,42,153)	CCSRCH152J50
C	483	(B,40,161)	CCSRCH152J50
C	486	(A,53,112) ELECT. CAPACITOR	CEAT102M6R3
C	487	(A,54,155) ELECT. CAPACITOR	CEAT102M6R3
C	488	(A,53,141) ELECT. CAPACITOR	CEAT471M6R3
C	489	(A,53,129) ELECT. CAPACITOR	CEAT471M6R3
C	490	(A,53,121) ELECT. CAPACITOR	CEAT102M6R3
C	491	(A,53,135)	CEAT470M16
C	492	(A,46,163)	CEAT221M6R3
C	493	(A,53,148)	CEAT470M16
C	497	(A,142,137)	CKSRYF104Z25
C	498	(A,144,151)	CKSRYF104Z25
C	499	(A,139,144)	CKSRYF104Z25
C	500	(A,136,141)	CKSRYF104Z25
C	505	(B,43,60)	CCSRCH102J50
C	506	(B,42,56)	CCSRCH471J50
C	507	(B,35,50)	CCSRCH102J50
C	508	(B,42,50)	CCSRCH471J50
C	510	(B,75,50)	CKSRYF104Z25
C	511	(B,84,53)	CCSRCH221J50
C	514	(B,78,71)	CKSRYF104Z25
C	515	(B,88,47)	CKSRYF104Z25
C	516	(B,32,47)	CCSRCH471J50
C	517	(B,77,53)	CCSRCH221J50
C	518	(B,28,44)	CCSRCH102J50
C	519	(B,30,44)	CCSRCH471J50
C	520	(B,36,56)	CCSRCH102J50
C	528	(A,68,97) ELECT. CAPACITOR	CEAT102M6R3
C	529	(A,73,128) ELECT. CAPACITOR	CEAT471M6R3
C	530	(A,73,113) ELECT. CAPACITOR	CEAT471M6R3
C	531	(A,73,120) ELECT. CAPACITOR	CEAT471M6R3
C	532	(A,79,130) ELECT. CAPACITOR	CEAT102M6R3
C	541	(A,66,78)	CEAT4R7M50
C	542	(A,66,84)	CEAT4R7M50
C	543	(A,66,90)	CEAT4R7M50
C	544	(A,73,107)	CEAT4R7M50
C	545	(A,84,121)	CEAT101M16
C	546	(B,72,55)	CKSRYF104Z25
C	547	(A,63,51)	CEAT220M25
C	548	(B,73,60)	CCSRCH102J50
C	549	(B,72,63)	CKSRYF105Z10
C	550	(A,63,61)	CEAT220M25
C	551	(A,63,67)	CEAT220M25
C	602	(B,27,173)	CKSRYB222K50
C	603	(B,51,173)	CKSRYB222K50
C	604	(B,60,174)	CCSRCH101J50
C	605	(B,44,173)	CCSRCH100D50
C	606	(B,48,173)	CCSRCH100D50
C	607	(A,72,166)	CEAT1R0M50
C	609	(A,63,168)	CEAT101M10
C	611	(A,56,169)	CEAT100M50
C	613	(B,130,168)	CKSRYF105Z10
C	614	(B,80,176)	CKSRYF104Z25
C	615	(B,88,179)	CCSRCH101J50
C	616	(B,80,178)	CKSRYB103K50
C	617	(A,114,183)	CKSRYF104Z25
C	618	(A,122,183)	CKSRYF104Z25
C	619	(A,125,181)	CKSRYF104Z25
C	620	(A,109,180)	CKSRYF105Z10
C	621	(B,88,183)	CCSRCH560J50
C	622	(A,109,176)	CCSRCH560J50
C	623	(B,97,180)	CCSRCH5R0C50
C	624	(B,96,172)	CCSRCH5R0C50
C	625	(B,122,171)	CKSRYF105Z10
C	626	(B,139,182)	CKSRYF104Z25
C	627	(B,141,182)	CCSRCH102J50
C	628	(A,134,173)	CKSRYB103K50
C	629	(A,129,175)	CKSRYB392K50
C	630	(A,141,176)	CCSRCH561J50
C	631	(A,137,167)	CKSRYB103K50
C	632	(A,128,172)	CKSRYB392K50
C	633	(A,139,172)	CCSRCH561J50
C	635	(A,111,166)	CCSRCH220J50
C	636	(A,112,164)	CCSRCH220J50
C	638	(A,114,188)	CEAT100M50

Mark	No.	Description	Part No.
C	639	(A,120,188)	CEAT3R3M50
C	640	(A,82,175)	CEAT101M10
C	641	(A,132,178)	CEAT100M50
C	642	(A,143,180)	CEAT101M10
C	643	(A,127,168)	CEAT101M10
C	701	(B,65,34)	CKSRYF105Z10
C	702	(B,26,28)	CCSRCH681J50
C	703	(B,24,30)	CKSRYF104Z25
C	751	(B,49,37)	CKSRYF104Z25
C	752	(B,56,43)	CCSRCH101J50
C	753	(B,46,41)	CCSRCH101J50
C	754	(B,27,40)	CCSRCH101J50

B SERVICE FLKY ASSY (DVR-LX60D, DVR-LX60D-AV)

MISCELLANEOUS

IC	101	(B,143,78)	FL DRIVER IC	PT6315
Q	101	(B,31,57)	DIGITAL TRANSISTOR	DTC124EUA
Q	103	(B,117,59)	DIGITAL TRANSISTOR	DTC124EUA
Q	104	(B,204,73)	TRANSISTOR	2SC5712
Q	105	(B,200,68)	TRANSISTOR	2SA1576A
Q	106	(B,210,61)	TRANSISTOR	2SC4081
Q	201	(B,99,15)	DIGITAL TRANSISTOR	DTC124EUA
Q	202	(B,108,16)	DIGITAL TRANSISTOR	DTC124EUA
Q	204	(B,91,16)	DIGITAL TRANSISTOR	DTC124EUA
Q	205	(B,117,16)	DIGITAL TRANSISTOR	DTC124EUA
Q	206	(B,83,18)	DIGITAL TRANSISTOR	DTC124EUA
D	101	(A,22,61)	LED(BLUE)	SLR343BC4T(JKLM)
D	103	(A,39,61)	LED(ORANGE)	SLR-343DC(NPQ)
D	107	(B,221,41)	DIODE	RF101L2S
D	108	(B,201,81)	DIODE	UDZS15(B)
D	109	(B,200,73)	DIODE	1SS355
D	110	(B,212,71)	DIODE	RF101L2S
D	111	(B,209,79)	DIODE	UDZS2R4(B)
D	112	(B,198,83)	DIODE	UDZS13(B)
D	113	(A,120,62)	LED(RED)	SLR-343VC(NPQ)
D	205	(A,88,22)	LED(RED)	SLR-343VC(NPQ)
D	207	(A,98,22)	LED(RED)	SLR-343VC(NPQ)
D	208	(A,108,22)	LED(RED)	SLR-343VC(NPQ)
D	210	(A,118,22)	LED(RED)	SLR-343VC(NPQ)
D	212	(A,75,22)	LED(RED)	SLR-343VC(NPQ)
L	101	(A,197,68)	AXIAL INDUCTOR	LAU220J
V	101	(A,95,89)	FLUORESCENT TUBE	VAW1091
S	103	(A,91,45)	SWITCH	VSG1024
S	104	(A,91,39)	SWITCH	VSG1024
S	105	(A,65,39)	SWITCH	VSG1024
S	106	(A,116,39)	SWITCH	VSG1024
S	107	(A,49,39)	SWITCH	VSG1024
S	108	(A,116,45)	SWITCH	VSG1024
S	109	(A,49,45)	SWITCH	VSG1024
S	110	(A,210,38)	SWITCH	VSG1024
S	111	(A,65,45)	SWITCH	VSG1024
S	112	(A,80,72)	SWITCH	VSG1024
S	201	(A,147,46)	SWITCH	VSG1024
S	202	(A,77,10)	SWITCH	VSG1024
T	101	(A,220,51)	TRANSFORMER	VTT1171
CN	101		CONNECTOR	9604S-17C
	103		REMOTE RECEIVER UNIT	GP1UM28XK0VF
	102		HOUSING ASSY(9P)	VKP2393

Mark	No.	Description	Part No.
RESISTORS			
R	101	(B,35,57)	RS1/16S182J
R	104	(B,194,59)	RS1/16S0R0J
R	109	(B,48,55)	RS1/16S151J
R	110	(B,126,74)	RS1/16S470J
R	111	(B,128,74)	RS1/16S470J
R	112	(B,124,74)	RS1/16S470J
R	113	(B,133,72)	RS1/16S823J
R	114	(B,46,56)	RS1/16S0R0J
R	115	(B,85,72)	RS1/16S103J
R	117	(B,197,74)	RS1/16S274J
R	118	(B,191,75)	RS1/16S102J
R	119	(B,208,73)	RS1/16S273J
R	120	(B,202,65)	RS1/16S103J
R	121	(B,215,58)	RS1/10S221J
R	122	(B,215,56)	RS1/16S122J
R	123	(B,210,83)	RS1/16S103J
R	124	(B,204,61)	RS1/16S102J
R	125	(B,79,43)	RS1/16S103J
R	126	(B,81,43)	RS1/16S103J
R	127	(B,74,41)	RS1/16S222J
R	128	(B,109,42)	RS1/16S222J
R	129	(B,72,41)	RS1/16S222J
R	130	(B,111,40)	RS1/16S222J
R	131	(B,69,43)	RS1/16S332J
R	132	(B,113,40)	RS1/16S332J
R	133	(B,117,64)	RS1/16S271J
R	135	(B,201,52)	RS1/16S562J
R	137	(B,219,83)	RS1/16S0R0J
R	138	(B,191,83)	RS1/16S0R0J
R	144	(B,149,68)	RS1/16S0R0J
R	148	(B,76,41)	RS1/16S470J
R	149	(B,87,44)	RS1/16S470J
R	150	(B,83,72)	RS1/16S470J
R	151	(B,61,49)	RS1/16S0R0J
R	204	(B,81,9)	RS1/16S222J
R	205	(B,148,32)	RS1/16S222J
R	221	(B,79,24)	RS1/16S271J
R	222	(B,90,27)	RS1/16S271J
R	224	(B,109,26)	RS1/16S271J
R	226	(B,98,26)	RS1/16S271J
R	228	(B,123,19)	RS1/16S271J
CAPACITORS			
C	102	(B,39,54)	CKSRYF104Z25
C	103	(B,95,83)	CKSRYB103K50
C	104	(B,215,86)	CKSRYB103K50
C	106	(B,147,68)	CKSRYF104Z25
C	107	(B,155,82)	CKSRYF104Z50
C	112	(B,132,80)	CKSRYF104Z25
C	113	(A,206,52)	CEAL101M10
C	115	(B,199,65)	CKSRYF104Z25
C	116	(A,199,61)	CEJQ101M16
C	117	(B,206,64)	CKSRYB223K50
C	118	(A,216,61)	ELECTR. CAPACITOR CEAL100M50
C	119	(B,97,35)	CKSRYF104Z25
C	120	(B,182,70)	CKSRYF105Z10
C	121	(B,210,56)	CKSRYB103K50
C	123	(B,106,44)	CKSRYF104Z25
C	124	(B,104,45)	CKSRYF104Z25

Mark	No.	Description	Part No.
C	127 (B,220,78)		CKSRYF104Z25
C	128 (A,221,65)		CEAL101M10
C	130 (B,83,68)		CKSRYF104Z25
C	132 (B,114,66)		CKSRYF104Z25
C	201 (B,148,29)		CKSRYF104Z25
C	202 (B,69,28)		CKSRYF104Z25
C	204 (B,88,28)		CKSRYF104Z25
C	205 (B,96,28)		CKSRYF104Z25
C	206 (B,105,28)		CKSRYF104Z25
C	207 (B,113,28)		CKSRYF104Z25

B SERVICE FLKY ASSY (DVR-550HX-S)

MISCELLANEOUS

IC	101 (B,143,78)	FL DRIVER IC	PT6315
Q	101 (B,31,57)	DIGITAL TRANSISTOR	DTC124EUA
Q	103 (B,117,59)	DIGITAL TRANSISTOR	DTC124EUA
Q	104 (B,204,73)	TRANSISTOR	2SC5712
Q	105 (B,200,68)	TRANSISTOR	2SA1576A
Q	106 (B,210,61)	TRANSISTOR	2SC4081
Q	201 (B,99,15)	DIGITAL TRANSISTOR	DTC124EUA
Q	202 (B,108,16)	DIGITAL TRANSISTOR	DTC124EUA
Q	204 (B,91,16)	DIGITAL TRANSISTOR	DTC124EUA
Q	205 (B,117,16)	DIGITAL TRANSISTOR	DTC124EUA
Q	206 (B,83,18)	DIGITAL TRANSISTOR	DTC124EUA
D	101 (A,22,61)	LED(BLUE)	SLR343BC4T(JKLM)
D	103 (A,39,61)	LED(ORANGE)	SLR-343DC(NPQ)
D	107 (B,221,41)	DIODE	RF101L2S
D	108 (B,201,81)	DIODE	UDZS15(B)
D	109 (B,200,73)	DIODE	1SS355
D	110 (B,212,71)	DIODE	RF101L2S
D	111 (B,209,79)	DIODE	UDZS2R4(B)
D	112 (B,198,83)	DIODE	UDZS13(B)
D	113 (A,120,62)	LED(RED)	SLR-343VC(NPQ)
D	205 (A,88,22)	LED(RED)	SLR-343VC(NPQ)
D	207 (A,98,22)	LED(RED)	SLR-343VC(NPQ)
D	208 (A,108,22)	LED(RED)	SLR-343VC(NPQ)
D	210 (A,118,22)	LED(RED)	SLR-343VC(NPQ)
D	212 (A,75,22)	LED(RED)	SLR-343VC(NPQ)
L	101 (A,197,68)	AXIAL INDUCTOR	LAU220J
V	101 (A,95,89)	FLUORESCENT TUBE	VAW1091
S	103 (A,91,45)	SWITCH	VSG1024
S	104 (A,91,39)	SWITCH	VSG1024
S	105 (A,65,39)	SWITCH	VSG1024
S	106 (A,116,39)	SWITCH	VSG1024
S	107 (A,49,39)	SWITCH	VSG1024
S	108 (A,116,45)	SWITCH	VSG1024
S	109 (A,49,45)	SWITCH	VSG1024
S	110 (A,210,38)	SWITCH	VSG1024
S	111 (A,65,45)	SWITCH	VSG1024
S	112 (A,80,72)	SWITCH	VSG1024
S	201 (A,147,46)	SWITCH	VSG1024
S	202 (A,77,10)	SWITCH	VSG1024
T	101 (A,220,51)	TRANSFORMER	VTT1171
CN	101	CONNECTOR	9604S-17C
	103	REMOTE RECEIVER UNIT	GP1UM28XK0VF
	102	HOUSING ASSY(9P)	VKP2393

RESISTORS

R	101 (B,35,57)		RS1/16S182J
R	104 (B,194,59)		RS1/16S0R0J
R	109 (B,48,55)		RS1/16S151J
R	110 (B,126,74)		RS1/16S470J
R	111 (B,128,74)		RS1/16S470J
R	112 (B,124,74)		RS1/16S470J
R	113 (B,133,72)		RS1/16S823J
R	114 (B,46,56)		RS1/16S0R0J
R	115 (B,85,72)		RS1/16S103J
R	117 (B,197,74)		RS1/16S274J
R	118 (B,191,75)		RS1/16S102J
R	119 (B,208,73)		RS1/16S273J
R	120 (B,202,65)		RS1/16S103J
R	121 (B,215,58)		RS1/10S221J
R	122 (B,215,56)		RS1/16S122J
R	123 (B,210,83)		RS1/16S103J
R	124 (B,204,61)		RS1/16S102J
R	125 (B,79,43)		RS1/16S103J
R	126 (B,81,43)		RS1/16S103J
R	127 (B,74,41)		RS1/16S222J
R	128 (B,109,42)		RS1/16S222J
R	129 (B,72,41)		RS1/16S222J
R	130 (B,111,40)		RS1/16S222J
R	131 (B,69,43)		RS1/16S332J
R	132 (B,113,40)		RS1/16S332J
R	133 (B,117,64)		RS1/16S271J
R	135 (B,201,52)		RS1/16S562J
R	137 (B,219,83)		RS1/16S0R0J
R	138 (B,191,83)		RS1/16S0R0J
R	144 (B,149,68)		RS1/16S0R0J
R	148 (B,76,41)		RS1/16S470J
R	149 (B,87,44)		RS1/16S470J
R	150 (B,83,72)		RS1/16S470J
R	151 (B,61,49)		RS1/16S0R0J
R	204 (B,81,9)		RS1/16S222J
R	205 (B,148,32)		RS1/16S222J
R	221 (B,79,24)		RS1/16S271J
R	222 (B,90,27)		RS1/16S271J
R	224 (B,109,26)		RS1/16S271J
R	226 (B,98,26)		RS1/16S271J
R	228 (B,123,19)		RS1/16S271J

CAPACITORS

C	102 (B,39,54)		CKSRYF104Z25
C	103 (B,95,83)		CKSRYB103K50
C	104 (B,215,86)		CKSRYB103K50
C	106 (B,147,68)		CKSRYF104Z25
C	107 (B,155,82)		CKSRYF104Z50
C	112 (B,132,80)		CKSRYF104Z25
C	113 (A,206,52)		CEAL101M10
C	115 (B,199,65)		CKSRYF104Z25
C	116 (A,199,61)		CEJQ101M16
C	117 (B,206,64)		CKSRYB223K50
C	118 (A,216,61)	ELECTR. CAPACITOR	CEAL100M50
C	119 (B,97,35)		CKSRYF104Z25
C	120 (B,182,70)		CKSRYF105Z10
C	121 (B,210,56)		CKSRYB103K50
C	123 (B,106,44)		CKSRYF104Z25
C	124 (B,104,45)		CKSRYF104Z25
C	127 (B,220,78)		CKSRYF104Z25
C	128 (A,221,65)		CEAL101M10

Mark	No.	Description	Part No.
	C 130	(B,83,68)	CKSRYF104Z25
	C 132	(B,114,66)	CKSRYF104Z25
	C 201	(B,148,29)	CKSRYF104Z25
	C 202	(B,69,28)	CKSRYF104Z25
	C 204	(B,88,28)	CKSRYF104Z25
	C 205	(B,96,28)	CKSRYF104Z25
	C 206	(B,105,28)	CKSRYF104Z25
	C 207	(B,113,28)	CKSRYF104Z25

C SERVICE FRJB ASSY

MISCELLANEOUS

JA	301 (A,211,31)	4P MINIDIN SOCKET(S)	AKP1238
JA	302 (A,181,32)	3P PIN JACK	VKB1208
KN	301 (A,231,17)	WRAPPING TERMINAL	VNF1084
KN	302 (A,154,17)	WRAPPING TERMINAL	VNF1084
CN	301 (A,198,7)	CONNECTOR	HLEM11S-1

RESISTORS

R	303	(B,181,16)	RS1/16S0R0J
R	305	(B,178,15)	RS1/16S0R0J
R	306	(B,165,15)	RS1/16S0R0J

CAPACITORS

C	303	(B,181,20)	CCSRCH471J50
C	305	(B,162,18)	CCSRCH471J50

D SERVICE MAIN ASSY

MISCELLANEOUS

IC	200	FLASH ROM IC	SST25V016BCS
IC	201	SDRAM(64M)	K4S641632K-UC60
IC	501	7CH DRIVER IC	BD7956FS
IC	1001	DVDR IC	MC-10050F1-107LU1A
IC	1102	FLASH ROM	VYW2404
IC	1201	DDR-SDRAM(512MBIT)	EDD5116AFTA-6B
IC	1221	DDR-SDRAM(512MBIT)	EDD5116AFTA-6B
IC	1301	IC	NJM12904V
IC	1302	IC	NJM12904V
IC	3101	AD CONVERTER IC	AK5359ET
IC	3201	IC	PCM1742KE
IC	3202	OP-AMP IC	UPC4570G2
IC	3701	IC	TC7WH34FU
IC	3702	IC	TC7SH08FUS1
IC	3707	RESET IC	PST3813U
IC	4501	FUSE	CEK1285
IC	4502	FUSE	CEK1285
⚠ IC	4511	REGULATOR IC	S-1170B33UC-OTS
⚠ IC	4521	REGULATOR IC	S-1170B25UC-OTK
⚠ IC	4531	REGULATOR IC	MM1701WH
⚠ IC	4541	REGULATOR IC (3.3V)	MM1563DF
⚠ IC	4552	REGULATOR IC	S-1170B50UC-OUJ
⚠ IC	4561	REGULATOR IC	S-1112B50MC-L7J
⚠ IC	4562	REGULATOR IC	S-1112B33MC-L6S
⚠ IC	4571	REGULATOR IC	S-1132B18-U5
IC	4701	LOGIC IC	TC74VCX245FK
IC	4702	IC	TC7SZ08FU
IC	4703	LOGIC IC	TC74VHC125FK
IC	5103	DV-PHY IC	UPD72852AGB-8EU
IC	5202	IC	R5523N001B
IC	5203	IC	TC7SH08FUS1
⚠ IC	5204	REGULATOR IC	R1173H001B
IC	5602	SATA BRIDGE IC	88SA8040B1-TBC1
IC	5701	IC	TC74VHC00FTS1
IC	5801	HDMI TRANSMITER	SII9002CSU
IC	5802	IC	TC7MB3257FK
Q	102	TRANSISTOR	RT1N141U
Q	1801	TRANSISTOR	2SA1576A
Q	1811	TRANSISTOR	2SA1576A
Q	2501	TRANSISTOR	2SA1576A
Q	2502	TRANSISTOR	2SA1576A
Q	2503	TRANSISTOR	2SA1576A
Q	2504	TRANSISTOR	2SA1576A
Q	2505	TRANSISTOR	2SA1576A
Q	3301	TRANSISTOR	2SA1576A
Q	3302	TRANSISTOR	2SC4081
Q	4581	TRANSISTOR	2SC4081
Q	5701	TRANSISTOR	2SC4081
Q	5801	CHIP TRANSISTOR	HN1C01FU
Q	5802	CHIP TR (PNP X 2)	UMB1N
Q	5804	DIGITAL TRANSISTOR	DTC124EUA
Q	5805	TRANSISTOR	2SA1576A
Q	5808	MOS FET	2SK2034
Q	5809	TRANSISTOR	UMD2N
Q	5810	CHIP TRANSISTOR	UMF21N
D	101	LED	SML-310YT
D	3201	DIODE	DAN202U
D	3711	CHIP DIODE	RB501V-40
D	3712	CHIP DIODE	RB501V-40
D	4521	CHIP DIODE	RB501V-40
D	4552	CHIP DIODE	RB501V-40
D	4571	CHIP DIODE	RB501V-40
L	105	CHIP COIL	BTH1103
L	1001	EMI FILTER	DTL1106
L	1002	EMI FILTER	DTL1106
L	1003	EMI FILTER	DTL1106
L	1004	EMI FILTER	DTL1106
L	1005	INDUCTOR	LCTC150K2125
L	1021	EMI FILTER	DTL1106
L	1022	EMI FILTER	DTL1106
L	1023	EMI FILTER	DTL1106
L	1024	EMI FILTER	DTL1106
L	1025	EMI FILTER	DTL1106
L	1801	CHIP COIL	LCYA390J2520
L	1811	INDUCTOR	LCYA150J2520
L	1821	EMI FILTER	DTL1106
L	1831	EMI FILTER	DTL1106
L	3301	CHIP COIL	LCYA180J2520
L	3302	INDUCTOR	LCYA100J2520
L	5101	INDUCTOR	CTF1305
L	5122	EMI FILTER	DTL1106
L	5201	COIL	ATH7015
L	5202	COIL	ATH7015
L	5601	EMI FILTER	DTL1106
L	5701	INDUCTOR	CTF1382
L	5801	COIL	ATH7022
L	5802	COIL	ATH7022
L	5803	COIL	ATH7022
L	5804	COIL	ATH7022
L	5805	EMI FILTER	DTL1106
JA	5701	1P PIN JACK	VKB1159

Mark	No.	Description	Part No.
JA	5801	HDMI CONNECTOR	AKP1278
X	101	CERAMIC RESONATOR	DSS1157
X	1001	CRYSTAL RESONATOR	VSS1220
X	1002	CRYSTAL RESONATOR	VSS1172
X	5101	CRYSTAL	VSS1211
X	5201	CRYSTAL	VSS1218
X	5502	CRYSTAL	VSS1214
CN	101	50P CONNECTOR	DKN1404
CN	103	14P CONNECTOR	VKN2030
CN	201	10P CONNECTOR	VKN2029
CN	501	FFC CONNECTOR	DKN1312
CN	502	4P FFC CONNECTOR	DKN1288
CN	601	5P FFC CONNECTOR	DKN1402
CN	1401	14P CONNECTOR	VKN2030
CN	1402	7P FFC CONNECTOR	RKN1048
CN	2301	40P CONNECTOR	VKN2065
CN	3801	18P CONNECTOR	VKN1811
CN	4501	KR CONNECTOR	S13B-PH
CN	4701	CONNECTOR	VKN2047
CN	5101	CONNECTOR	VKN1932
CN	5201	CONNECTOR	VKN1936
CN	5604	SATA PLUG HEADER	VKN2063

RESISTORS

R	104		RS1/16SS123J
R	105		RS1/16SS0R0J
R	107		RS1/16SS473J
R	108		RS1/16SS682J
R	109		RS1/16SS622J
R	110		RS1/16SS102J
R	111		RS1/16SS474J
R	112		RS1/16SS474J
R	114		RS1/16SS333J
R	115		RS1/16SS0R0J
R	116		RS1/16SS332J
R	117		RS1/16SS680J
R	119		RS1/16SS0R0J
R	124		RS1/16SS0R0J
R	128		RS1/16SS0R0J
R	129		RS1/16SS0R0J
R	130		RS1/16SS221J
R	131		RS1/16SS221J
R	132		RS1/16SS221J
R	133		RS1/16SS221J
R	134		RS1/16SS473J
R	135		RS1/16SS221J
R	136		RS1/16SS221J
R	137		RS1/16SS221J
R	138		RS1/16SS473J
R	139		RS1/16SS221J
R	165		RS1/16SS821J
R	166		RS1/16SS821J
R	167		RS1/16SS821J
R	168		RS1/16SS0R0J
R	170		RS1/16SS332J
R	171		RS1/16SS332J
R	172		RS1/16SS332J
R	174		RS1/16S4701F
R	192		RS1/16S101J
R	193		RS1/16SS0R0J

Mark	No.	Description	Part No.
R	201		RS1/16SS103J
R	202		RS1/16SS330J
R	203		RS1/16SS330J
R	204		RAB4CQ330J
R	205		RAB4CQ330J
R	206		RAB4CQ330J
R	210		RS1/16SS330J
R	211		RS1/16SS0R0J
R	219	RESISTOR ARRAY	RAB4CQ472J
R	220	RESISTOR ARRAY	RAB4CQ472J
R	221		RS1/16SS473J
R	222		RS1/16SS473J
R	223		RS1/16SS220J
R	230		RS1/16SS0R0J
R	233		RS1/16SS0R0J
R	234		RS1/16SS0R0J
R	236		RS1/16SS220J
R	237		RS1/16SS103J
R	238		RS1/16SS220J
R	239		RS1/16SS103J
R	240		RS1/16SS220J
R	241		RS1/16SS103J
R	242		RS1/16SS220J
R	243		RS1/16SS103J
R	244		RS1/16SS220J
R	245		RS1/16SS103J
R	248		RS1/16SS103J
R	252		RS1/16SS103J
R	253		RS1/16SS103J
R	256		RS1/16SS103J
R	271		RS1/10S0R0J
R	273		RS1/10S0R0J
R	274		RS1/10S0R0J
R	281		RS1/16SS0R0J
R	301		RS1/16SS473J
R	306		RS1/16SS222J
R	307		RS1/16SS222J
R	310		RS1/16SS102J
R	311		RS1/16SS102J
R	312		RS1/16SS102J
R	313		RS1/16SS473J
R	314		RS1/16SS102J
R	317		RAB4CQ330J
R	318		RAB4CQ330J
R	319		RAB4CQ330J
R	320		RAB4CQ330J
R	501		DCN1171
R	502		DCN1172
R	503		RS1/16SS102J
R	504		RS1/16SS102J
R	505		RS1/16SS123J
R	506		RS1/16SS102J
R	507		RS1/16SS102J
R	510		RS1/10S1R8J
R	511		RS1/10S1R8J
R	515		RS1/16SS333J
R	516		RS1/16SS123J
R	601		RS1/16SS103J
R	602		RS1/16SS103J
R	603		RS1/16SS102J

Mark	No.	Description	Part No.
R	604		RS1/16SS102J
R	1001		RS1/16SS103J
R	1003	CHIP RESISTOR	RS1/16S6800F
R	1004		RS1/16S4700F
R	1005		RS1/16SS153J
R	1006		RS1/16SS153J
R	1013		RS1/16SS103J
R	1016		RS1/16SS103J
R	1017		RS1/16SS0R0J
R	1018		RS1/16SS0R0J
R	1019		RS1/16SS0R0J
R	1021		RS1/16SS103J
R	1027		RS1/16SS103J
R	1028		RS1/16SS103J
R	1029		RS1/16SS820J
R	1030		RS1/16SS101J
R	1031		RS1/16SS221J
R	1032	RESISTOR ARRAY	RAB4CQ103J
R	1033	RESISTOR ARRAY	RAB4CQ103J
R	1034	RESISTOR ARRAY	RAB4CQ103J
R	1035	RESISTOR ARRAY	RAB4CQ103J
R	1036		RS1/16S43R0D
R	1037	CHIP RESISTOR	RS1/16S1000F
R	1039		RS1/16S43R0D
R	1040	CHIP RESISTOR	RS1/16S1000F
R	1066		RS1/16SS473J
R	1067		RS1/16SS473J
R	1068		RS1/16SS473J
R	1069		RS1/16SS473J
R	1071		RS1/16SS103J
R	1103		RS1/16SS0R0J
R	1107		RS1/16SS0R0J
R	1110		RS1/16SS0R0J
R	1111		RS1/16SS104J
R	1132		RS1/16SS470J
R	1153		RS1/16SS472J
R	1161		RS1/16SS472J
R	1163		RS1/16SS472J
R	1164		RS1/16SS472J
R	1181		RS1/16SS103J
R	1182		RS1/16SS103J
R	1191		RS1/16SS472J
R	1195		RS1/16SS472J
R	1199		RS1/16SS103J
R	1205		RS1/16SS103J
R	1219		RS1/16SS0R0J
R	1240		RS1/16SS220J
R	1241	RESISTOR ARRAY	RAB4CQ0R0J
R	1242	RESISTOR ARRAY	RAB4CQ0R0J
R	1243		RS1/16SS0R0J
R	1244		RS1/16SS330J
R	1245	RESISTOR ARRAY	RAB4CQ220J
R	1246	RESISTOR ARRAY	RAB4CQ220J
R	1247		RS1/16SS220J
R	1248	RESISTOR ARRAY	RAB4CQ0R0J
R	1249	RESISTOR ARRAY	RAB4CQ0R0J
R	1250		RS1/16SS0R0J
R	1251		RS1/16SS330J
R	1252		RS1/16SS330J
R	1255	RESISTOR ARRAY	RAB4CQ220J
R	1256	RESISTOR ARRAY	RAB4CQ220J
R	1257		RS1/16SS220J
R	1258		RS1/16SS220J
R	1260		RS1/16SS220J
R	1261	RESISTOR ARRAY	RAB4CQ0R0J
R	1262	RESISTOR ARRAY	RAB4CQ0R0J
R	1263		RS1/16SS0R0J
R	1264		RS1/16SS330J
R	1265	RESISTOR ARRAY	RAB4CQ220J
R	1266	RESISTOR ARRAY	RAB4CQ220J
R	1267		RS1/16SS220J
R	1268	RESISTOR ARRAY	RAB4CQ0R0J
R	1269	RESISTOR ARRAY	RAB4CQ0R0J
R	1270		RS1/16SS0R0J
R	1271		RS1/16SS330J
R	1272		RS1/16SS330J
R	1273	RESISTOR ARRAY	RAB4CQ220J
R	1274	RESISTOR ARRAY	RAB4CQ220J
R	1275		RS1/16SS220J
R	1276		RS1/16SS220J
R	1277		RS1/16SS0R0J
R	1278		RS1/16SS0R0J
R	1279		RS1/16SS391J
R	1281	RESISTOR ARRAY	RAB4CQ470J
R	1282	RESISTOR ARRAY	RAB4CQ470J
R	1283	RESISTOR ARRAY	RAB4CQ470J
R	1284		RS1/16SS470J
R	1285		RS1/16SS470J
R	1286		RS1/16SS470J
R	1287	RESISTOR ARRAY	RAB4CQ470J
R	1288		RS1/16SS220J
R	1289		RS1/16SS220J
R	1301		RS1/16S4700F
R	1302		RS1/16S1001F
R	1303		RS1/16S1001F
R	1312		RS1/16S1001F
R	1313		RS1/16S1001F
R	1314		RS1/16S0R0J
R	1401		RS1/16SS220J
R	1402		RS1/16SS220J
R	1403		RS1/16SS220J
R	1404		RS1/16SS220J
R	1405		RS1/16SS220J
R	1406		RS1/16SS220J
R	1407		RS1/16SS220J
R	1411	RESISTOR ARRAY	RAB4CQ103J
R	1412		RS1/16SS103J
R	1413		RS1/16SS473J
R	1414		RS1/16SS220J
R	1415		RS1/16SS220J
R	1416		RS1/16SS220J
R	1421		RS1/16SS103J
R	1422		RS1/16SS103J
R	1802		RS1/16SS221J
R	1803		RS1/16SS331J
R	1804		RS1/16SS330J
R	1812		RS1/16SS221J
R	1813		RS1/16SS331J
R	1814		RS1/16SS330J
R	2301		RS1/16SS332J

Mark	No.	Description	Part No.
R	2302		RS1/16SS0R0J
R	2304		RS1/16SS0R0J
R	2316		RS1/16SS103J
R	2501		RS1/16SS681J
R	2502		RS1/16S1500F
R	2504		RS1/16SS681J
R	2505		RS1/16S1500F
R	2506		RS1/16S0R0J
R	2507		RS1/16SS681J
R	2508		RS1/16S1500F
R	2510		RS1/16SS681J
R	2511		RS1/16S1500F
R	2513		RS1/16SS681J
R	2514		RS1/16S1500F
R	3002		RS1/16SS0R0J
R	3003		RS1/16SS0R0J
R	3004		RS1/16SS0R0J
R	3005	RESISTOR ARRAY	RAB4CQ103J
R	3006		RS1/16SS0R0J
R	3007		RS1/16SS0R0J
R	3008		RS1/16SS0R0J
R	3009		RS1/16SS0R0J
R	3010		RS1/16SS0R0J
R	3011		RS1/16SS0R0J
R	3012		RS1/16SS0R0J
R	3101		RS1/16SS0R0J
R	3102		RS1/16SS0R0J
R	3103		RS1/16SS0R0J
R	3104		RS1/16SS0R0J
R	3105		RS1/16SS105J
R	3106		RS1/16SS103J
R	3107		RS1/16SS470J
R	3108		RS1/16SS470J
R	3109		RS1/16SS470J
R	3111		RS1/16SS0R0J
R	3113		RS1/16SS103J
R	3201		RS1/16SS470J
R	3202		RS1/16SS470J
R	3203		RS1/16SS470J
R	3204		RS1/16SS0R0J
R	3206		RS1/16SS470J
R	3207		RS1/16SS470J
R	3208		RS1/16SS470J
R	3209		RS1/16SS104J
R	3210		RN1/16SE1201D
R	3211		RN1/16SE1002D
R	3213		RS1/16SS681J
R	3214		RS1/16SS682J
R	3215		RS1/16SS223J
R	3216		RN1/16SE1201D
R	3217		RN1/16SE1002D
R	3218		RN1/16SE2202D
R	3219		RS1/16SS682J
R	3220		RS1/16SS101J
R	3221		RS1/16SS101J
R	3222		RS1/16SS682J
R	3223		RN1/16SE2202D
R	3224		RS1/16SS101J
R	3227		RS1/16SS101J
R	3228		RS1/16SS103J

Mark	No.	Description	Part No.
R	3229		RS1/16SS103J
R	3230		RS1/10S0R0J
R	3232		RS1/16SS0R0J
R	3233		RS1/16SS0R0J
R	3234		RS1/16SS0R0J
R	3301		RS1/16SS470J
R	3302		RS1/16SS0R0J
R	3305		RS1/16SS331J
R	3306		RS1/16S4700F
R	3307	CHIP RESISTOR	RS1/16SS1801F
R	3308		RS1/16SS100J
R	3309		RS1/16SS681J
R	3310		RS1/16SS103J
R	3315		RS1/16SS681J
R	3320		RS1/16SS681J
R	3327		RS1/16SS681J
R	3336		RS1/16SS0R0J
R	3337		RS1/16SS103J
R	3341		RS1/16SS0R0J
R	3342		RS1/16SS103J
R	3703		RS1/16SS101J
R	3704		RS1/16SS101J
R	3705		RS1/16SS101J
R	3708		RS1/16SS103J
R	3715		RS1/16SS0R0J
R	3716		RS1/16SS330J
R	3720		RS1/16SS0R0J
R	3738		RS1/16SS103J
R	3808		RS1/16SS101J
R	3810		RAB4CQ330J
R	3811		RAB4CQ330J
R	3812		RAB4CQ330J
R	3813		RAB4CQ330J
R	3814		RS1/16SS220J
R	3816		RS1/16SS820J
R	3817		RS1/16SS820J
R	3818		RS1/16SS220J
R	3820		RS1/16SS820J
R	3821		RS1/16SS220J
R	3823		RS1/16SS820J
R	3824	RESISTOR ARRAY	RAB4CQ820J
R	3828	RESISTOR ARRAY	RAB4CQ223J
R	3829	RESISTOR ARRAY	RAB4CQ223J
R	3830	RESISTOR ARRAY	RAB4CQ223J
R	3831	RESISTOR ARRAY	RAB4CQ223J
R	3832	RESISTOR ARRAY	RAB4CQ223J
R	3833	RESISTOR ARRAY	RAB4CQ223J
R	3835		RS1/16SS330J
R	3837		RAB4CQ330J
R	3838		RAB4CQ330J
R	3839		RAB4CQ330J
R	3840		RAB4CQ330J
R	3841		RS1/16SS820J
R	3842		RS1/16SS562J
R	3843		RS1/16SS220J
R	3844		RS1/16SS220J
R	3845		RS1/16SS820J
R	3846		RS1/16SS102J
R	3847		RS1/16SS220J
R	3848		RS1/16SS820J

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
R	3849		RS1/16SS103J	R	5110		RS1/16SS103J
R	3850		RS1/16SS330J	R	5111		RS1/16SS102J
R	3851		RAB4CQ330J	R	5113		RS1/16SS103J
R	3857		RS1/16SS0R0J	R	5114		RS1/16SS103J
R	3862		RS1/16SS0R0J	R	5115		RS1/16SS103J
R	3871		RS1/16SS223J	R	5116		RS1/16SS103J
R	4501		RS1/10S0R0J	R	5117		RS1/16SS104J
R	4504		RS1/10S272J	R	5118		RN1/16SE9101D
R	4505		RS1/10S272J	R	5119	CHIP RESISTOR	RS1/16S56R0D
R	4507		RS1/10S272J	R	5120	CHIP RESISTOR	RS1/16S56R0D
R	4511		RS1/16SS0R0J	R	5121	CHIP RESISTOR	RS1/16S56R0D
R	4521		RS1/16SS682J	R	5122	CHIP RESISTOR	RS1/16S56R0D
R	4526		RS1/16SS153J	R	5123		RS1/16SS103J
R	4531		RS1/16SS0R0J	R	5124		RS1/16SS103J
R	4541		RS1/16SS0R0J	R	5125		RS1/16SS102J
R	4551		RS1/10S0R0J	R	5127		RS1/16SS103J
R	4552		RS1/10S0R0J	R	5129		RS1/16SS820J
R	4553		RS1/10S0R0J	R	5130		RS1/16SS0R0J
R	4554		RS1/10S0R0J	R	5131		RN1/16SE5101D
R	4556		RS1/10S0R0J	R	5132		RS1/16SS0R0J
R	4558		RS1/16SS223J	R	5133		RS1/16SS0R0J
R	4559		RS1/16SS0R0J	R	5134		RS1/16SS0R0J
R	4573		RS1/16SS0R0J	R	5135		RS1/16SS0R0J
R	4574		RS1/16S0R0J	R	5140		RS1/16SS103J
R	4575		RS1/16S0R0J	R	5141		RS1/16SS0R0J
R	4581		RS1/16SS101J	R	5201		RS1/16SS0R0J
R	4701	RESISTOR ARRAY	RAB4CQ101J	R	5202		RS1/16SS0R0J
R	4702	RESISTOR ARRAY	RAB4CQ101J	R	5203		RS1/16S3301F
R	4703		RS1/16SS101J	R	5204		RS1/16S8200F
R	4704		RS1/16SS0R0J	R	5205		RS1/16SS680J
R	4705		RS1/16SS0R0J	R	5207		RS1/16SS0R0J
R	4706		RS1/16SS0R0J	R	5212		RS1/16SS0R0J
R	4707		RS1/16SS103J	R	5213		RS1/16SS0R0J
R	4708	RESISTOR ARRAY	RAB4CQ103J	R	5214		RS1/16SS473J
R	4709	RESISTOR ARRAY	RAB4CQ103J	R	5215		RS1/16SS473J
R	4710		RS1/16SS103J	R	5216		RS1/16SS0R0J
R	4711		RS1/16SS103J	R	5217		RS1/16SS0R0J
R	4712		RS1/16SS103J	R	5220		RS1/16S1501F
R	4713		RS1/16SS103J	R	5221		RS1/16SS473J
R	4714		RS1/16SS0R0J	R	5222		RS1/16SS100J
R	4721	RESISTOR ARRAY	RAB4CQ101J	R	5445		RS1/10S0R0J
R	4722	RESISTOR ARRAY	RAB4CQ101J	R	5606		RS1/16SS820J
R	4723		RS1/16SS470J	R	5607		RS1/16SS820J
R	4724		RS1/16SS220J	R	5608		RS1/16SS103J
R	4725		RS1/16SS220J	R	5609		RS1/16SS103J
R	4726		RS1/16SS220J	R	5610		RS1/16SS102J
R	4727		RS1/16SS103J	R	5612		RS1/16SS103J
R	4728		RS1/16SS103J	R	5613		RS1/16SS102J
R	4729		RS1/16SS0R0J	R	5614		RS1/16SS102J
R	4731		RS1/16SS472J	R	5615		RS1/16SS102J
R	4732		RS1/16SS472J	R	5616		RS1/16SS103J
R	5101	RESISTOR ARRAY	RAB4CQ104J	R	5618		RS1/16SS103J
R	5102	RESISTOR ARRAY	RAB4CQ104J	R	5619		RS1/16SS102J
R	5103		RS1/16SS104J	R	5622		RS1/16SS820J
R	5104		RS1/16SS104J	R	5623		RS1/16SS820J
R	5105	RESISTOR ARRAY	RAB4CQ680J	R	5624		RS1/16SS820J
R	5106	RESISTOR ARRAY	RAB4CQ680J	R	5626		RS1/16SS220J
R	5107		RS1/16SS680J	R	5627		RS1/16SS820J
R	5108		RS1/16SS680J	R	5628		RS1/16SS220J
R	5109		RS1/16SS470J	R	5629		RS1/16SS820J

Mark	No.	Description	Part No.
R	5630		RS1/16SS820J
R	5631		RS1/16SS220J
R	5632		RAB4CQ330J
R	5638		RAB4CQ330J
R	5642		RAB4CQ330J
R	5646		RAB4CQ330J
R	5650		RS1/16SS820J
R	5651		RS1/16S1202F
R	5652		RS1/16SS101J
R	5657		RS1/16SS102J
R	5658		RS1/16SS102J
R	5659		RS1/16SS102J
R	5661		RS1/16SS102J
R	5664		RS1/16S0R0J
R	5672		RS1/16S0R0J
R	5688		RS1/16SS105J
R	5689		RS1/16SS152J
R	5690		RS1/16SS0R0J
R	5692		RS1/16SS0R0J
R	5693		RS1/16SS0R0J
R	5701		RS1/16SS471J
R	5702		RS1/16SS471J
R	5703		RS1/16SS681J
R	5704		RS1/16SS151J
R	5705		RS1/16S0R0J
R	5706	CHIP RESISTOR	RS1/16S75R0F
R	5707		RS1/16SS104J
R	5804		RS1/16SS473J
R	5805		RS1/16SS472J
R	5806		RS1/16SS102J
R	5807		RS1/16SS562J
R	5808		RS1/16SS472J
R	5809		RS1/16SS272J
R	5812		RS1/16SS472J
R	5813		RS1/16SS272J
R	5814		RS1/16SS472J
R	5815		RS1/16SS272J
R	5817		RS1/16SS472J
R	5818		RS1/16SS472J
R	5820		RS1/10S0R0J
R	5821		RS1/16SS472J
R	5822		RS1/16SS472J
R	5825	RESISTOR ARRAY	RAB4CQ220J
R	5826	RESISTOR ARRAY	RAB4CQ220J
R	5827	RESISTOR ARRAY	RAB4CQ220J
R	5828	RESISTOR ARRAY	RAB4CQ220J
R	5829		RS1/16SS560J
R	5831		RS1/16SS0R0J
R	5833		RS1/16SS220J
R	5834		RS1/16SS220J
R	5836		RS1/16SS103J
R	5837		RS1/16SS0R0J
R	5838		RS1/16SS330J
R	5839		RS1/16SS471J
R	5842		RS1/16SS331J
R	5843		RS1/16SS331J
R	5844		RS1/16SS331J
R	5845		RS1/16SS331J
R	5846		RS1/16SS472J
R	5848		RS1/16SS472J
R	5852		RS1/16SS103J
R	5853		RS1/16SS103J
R	5854		RS1/16SS103J
R	5855	RESISTOR ARRAY	RAB4CQ100J
R	5856		RS1/16SS103J
R	5857		RS1/16SS103J
R	5859		RS1/16SS103J
R	5861		RS1/16SS103J
R	5862		RS1/16SS472J
R	5863		RS1/16SS681J
R	5864		RS1/16SS102J
R	5865		RS1/16SS0R0J
R	5867		RS1/16SS561J
R	5868		RS1/16SS222J
R	5869		RS1/16SS472J
R	5870		RS1/16SS273J
R	6001		RS1/16SS0R0J

CAPACITORS

C	100		CKSSYB102K50
C	101		CKSSYB102K50
C	103	CHIP PX CAPACITOR	VCH1234
C	104	CAPACITOR(CERAMIC)	VCG1057
C	105		CKSSYB102K50
C	106		CKSSYF104Z16
C	107		CKSSYB681K50
C	113		CKSSYB472K25
C	114		CKSSYB472K25
C	115		CKSSYB103K16
C	116		CKSSYB104K10
C	117		CKSSYB102K50
C	120		CKSSYB104K10
C	121		CKSSYB222K50
C	122		CKSSYB222K50
C	124		CKSSYB104K10
C	125	CAPACITOR(CERAMIC)	VCG1058
C	127		CKSSYB473K10
C	128		CKSSYB104K10
C	129	CAPACITOR(CERAMIC)	VCG1058
C	130		CKSQYB475K6R3
C	131		CKSSYB683K10
C	133		CKSSYB104K10
C	134		CKSSYB104K10
C	135		CKSSYB103K16
C	136		CKSSYB104K10
C	137		CKSSYB682K25
C	140	ELECT. CAPACITOR	DCH1199
C	141	ELECT. CAPACITOR	DCH1199
C	142		DCH1201
C	143		DCH1201
C	144		CKSSYB103K16
C	145		CKSSYB103K16
C	146		DCH1201
C	147	ELECT. CAPACITOR	DCH1198
C	148	ELECT. CAPACITOR	DCH1198
C	149		CKSSYB103K16
C	152		CKSSYB102K50
C	153		CEVW100M16
C	154	CAPACITOR(CERAMIC)	VCG1057
C	155	ELECT. CAPACITOR	DCH1199

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
C	156		CKSSYB182K50	C	1002		CKSSYB104K10
C	157		CKSSYB103K16	C	1003	CHIP ELECT.CAPACITOR	CEVW101M4
C	158		CKSSYB103K16	C	1004	CAPACITOR(CERAMIC)	VCG1057
C	159		CKSSYF104Z16	C	1005		CKSSYB102K50
C	162	CAPACITOR(CERAMIC)	VCG1057	C	1006	CAPACITOR(CERAMIC)	VCG1057
C	163	CHIP ELECT.CAPACITOR	CEVW221M4	C	1007	CHIP ELECT.CAPACITOR	CEVW221M4
C	164		CKSSYB102K50	C	1008	CAPACITOR(CERAMIC)	VCG1057
C	165		CCSSCH220J50	C	1009	CHIP PX CAPACITOR	VCH1234
C	166		CCSSCH220J50	C	1010	CAPACITOR(CERAMIC)	VCG1057
C	167		CKSSYF104Z16	C	1011		CKSSYB102K50
C	169		CKSSYB104K10	C	1012	CHIP PVO CAPACITOR	VCH1268
C	170		CCSSCH470J50	C	1013	CAPACITOR(CERAMIC)	VCG1057
C	171		CKSSYB104K10	C	1014		CKSSYB102K50
C	172		CCSSCH470J50	C	1015		CKSSYB104K10
C	173		CCSSCH470J50	C	1016		CKSSYB104K10
C	174		CCSSCH470J50	C	1017		CKSSYB104K10
C	176		CCSSCH220J50	C	1018		CKSSYB104K10
C	177		CCSSCH220J50	C	1019		CKSSYB104K10
C	180		DCH1201	C	1020		CEVW100M16
C	181		CKSQYB475K6R3	C	1021		DCH1201
C	182		DCH1201	C	1022	CAPACITOR(CERAMIC)	VCG1057
C	187		CKSSYB103K16	C	1023		CKSSYB102K50
C	188		CKSSYB103K16	C	1024	CHIP ELECT.CAPACITOR	CEVW101M4
C	189		CKSSYB102K50	C	1025	CAPACITOR(CERAMIC)	VCG1057
C	194		CKSQYB475K6R3	C	1026		CKSSYB102K50
C	197		CKSSYB104K10	C	1027		CKSSYB104K10
C	199	CAPACITOR(CERAMIC)	VCG1057	C	1028		CKSSYB104K10
C	201		CKSSYB104K10	C	1029		CKSSYB104K10
C	202	CAPACITOR(CERAMIC)	VCG1057	C	1030		CKSSYB104K10
C	280	CAPACITOR(CERAMIC)	VCG1058	C	1031		CKSSYB104K10
C	281	CAPACITOR(CERAMIC)	VCG1058	C	1032		CKSSYB104K10
C	282	CAPACITOR(CERAMIC)	VCG1058	C	1033		CKSSYB104K10
C	283	CAPACITOR(CERAMIC)	VCG1058	C	1034		CKSSYB104K10
C	284	CAPACITOR(CERAMIC)	VCG1058	C	1035		CKSSYB104K10
C	285	CAPACITOR(CERAMIC)	VCG1058	C	1036	CHIP ELECT.CAPACITOR	CEVW101M4
C	286		DCH1201	C	1037	CAPACITOR(CERAMIC)	VCG1057
C	287	CAPACITOR(CERAMIC)	VCG1058	C	1038		CKSSYB102K50
C	288		CKSSYF104Z16	C	1039	CHIP ELECT.CAPACITOR	CEVW101M4
C	289		CKSSYB102K50	C	1040	CAPACITOR(CERAMIC)	VCG1057
C	290		CKSSYF104Z16	C	1041		CKSSYB102K50
C	291		CKSSYB102K50	C	1042		CCSSCJ3R0C50
C	501		CKSSYF104Z16	C	1043		CCSSCJ3R0C50
C	502	CHIP CERAMIC C.	DCH1263	C	1044		CCSSCH5R0C50
C	503		CKSRYB471K50	C	1045		CCSSCH5R0C50
C	504		CKSSYB104K10	C	1047		CKSSYB104K10
C	505		CKSRYB104K25	C	1048	CAPACITOR(CERAMIC)	VCG1057
C	508		CKSSYB102K50	C	1049		CKSSYB102K50
C	509		CCSSCH330J50	C	1050	CHIP ELECT.CAPACITOR	CEVW101M4
C	510		CCSSCH680J50	C	1051		DCH1201
C	511		CKSQYB105K16	C	1052	CAPACITOR(CERAMIC)	VCG1057
C	512		CKSRYF104Z16	C	1053		CKSSYB102K50
C	513		CKSRYF104Z16	C	1056	CAPACITOR(CERAMIC)	VCG1057
C	514		CKSRYB104K25	C	1057		CKSSYF104Z16
C	515		CKSRYB104K25	C	1058		CKSSYB103K16
C	516		CKSSYB104K10	C	1059	CAPACITOR(CERAMIC)	VCG1057
C	532		CKSSYB104K10	C	1060		CKSSYF104Z16
C	803		CKSRYF104Z16	C	1061		CKSSYB102K50
C	824		CKSQYF104Z25	C	1062	CAPACITOR(CERAMIC)	VCG1057
C	832		CKSRYF104Z16	C	1063		CKSSYF104Z16
C	1001		CKSSYB104K10	C	1064		CKSSYB102K50

Mark	No.	Description	Part No.
C	1065		CKSSYB102K50
C	1066	CAPACITOR(CERAMIC)	VCG1057
C	1067		CKSSYF104Z16
C	1068		CKSSYB102K50
C	1101		CKSSYB102K50
C	1104	CAPACITOR(CERAMIC)	VCG1057
C	1105		CKSSYF104Z16
C	1113	CAPACITOR(CERAMIC)	VCG1057
C	1202	CAPACITOR(CERAMIC)	VCG1057
C	1203		CKSSYF104Z16
C	1204	CAPACITOR(CERAMIC)	VCG1057
C	1205		CKSSYB103K16
C	1206		CKSSYB103K16
C	1207		CKSSYB102K50
C	1208	CAPACITOR(CERAMIC)	VCG1057
C	1209		CKSSYB102K50
C	1210		CKSSYB102K50
C	1211		CKSSYF104Z16
C	1212		CKSSYF104Z16
C	1213		CKSSYF104Z16
C	1214		CKSSYF104Z16
C	1215	CHIP PVO CAPACITOR	VCH1268
C	1216	CAPACITOR(CERAMIC)	VCG1057
C	1217	CAPACITOR(CERAMIC)	VCG1057
C	1218	CAPACITOR(CERAMIC)	VCG1057
C	1219	CAPACITOR(CERAMIC)	VCG1057
C	1220	CAPACITOR(CERAMIC)	VCG1057
C	1221	CAPACITOR(CERAMIC)	VCG1057
C	1222		CKSSYF104Z16
C	1223	CAPACITOR(CERAMIC)	VCG1057
C	1224		CKSSYB103K16
C	1225		CKSSYB103K16
C	1226		CKSSYB102K50
C	1227	CAPACITOR(CERAMIC)	VCG1057
C	1228		CKSSYB102K50
C	1229		CKSSYB102K50
C	1230		CKSSYF104Z16
C	1231		DCH1201
C	1235		DCH1201
C	1236	CHIP PVO CAPACITOR	VCH1268
C	1291		CKSSYF104Z16
C	1301		CKSQYB225K10
C	1302		CKSSYF104Z16
C	1303		CKSSYF104Z16
C	1304		CEVW470M6R3
C	1312		CKSSYF104Z16
C	1313		CKSSYF104Z16
C	1315		CKSQYB225K10
C	1316		DCH1201
C	1401		CKSSYB103K16
C	1421	CAPACITOR(CERAMIC)	VCG1057
C	1801	CAPACITOR(CERAMIC)	VCG1057
C	1802		CKSQYB225K10
C	1803		CCSSCH221J50
C	1804		CKSSYB331K50
C	1805		CKSSYB473K10
C	1811	CAPACITOR(CERAMIC)	VCG1057
C	1812		CKSQYB225K10
C	1813		CCSSCH101J50
C	1814		CCSSCH151J50

Mark	No.	Description	Part No.
C	1815		CKSSYB473K10
C	2305	CAPACITOR(CERAMIC)	VCG1058
C	2501	CAPACITOR(CERAMIC)	VCG1057
C	2502	CAPACITOR(CERAMIC)	VCG1057
C	2503	CAPACITOR(CERAMIC)	VCG1057
C	2504	CAPACITOR(CERAMIC)	VCG1057
C	2505	CAPACITOR(CERAMIC)	VCG1057
C	2506		DCH1201
C	3103		CEVW101M16
C	3104	CAPACITOR(CERAMIC)	VCG1057
C	3105		CKSSYF104Z16
C	3106		CKSSYB102K50
C	3107	CAPACITOR(CERAMIC)	VCG1057
C	3108	CHIP ELECT.CAPACITOR	CEVW221M4
C	3201	ELECT. CAPACITOR	CEAT102M6R3
C	3202		CKSSYF104Z16
C	3203		CKSSYB102K50
C	3204		CKSSYB331K50
C	3206		CKSSYF104Z16
C	3207		CEVW470M6R3
C	3211		CEVW101M16
C	3212		CKSSYF104Z16
C	3213		CKSSYB561K50
C	3214		CKSSYB561K50
C	3215		CCSSCH820J50
C	3216		CCSSCH820J50
C	3217		CKSSYF104Z16
C	3218		CEVW101M16
C	3219	CHIP ELECT.CAPACITOR	CEVW221M4
C	3220	CAPACITOR(CERAMIC)	VCG1057
C	3301		CCSRCH7R0D50
C	3302		CCSRCH7R0D50
C	3303		CCSSCH150J50
C	3304		CCSSCH820J50
C	3305		CCSSCH220J50
C	3307		DCH1201
C	3313		CKSQYB103K50
C	3319		CKSQYB103K50
C	3325		CKSQYB103K50
C	3332	CAPACITOR(CERAMIC)	VCG1057
C	3342	CAPACITOR(CERAMIC)	VCG1057
C	3701		CKSSYB103K16
C	3703	CAPACITOR(CERAMIC)	VCG1057
C	3704		DCH1201
C	3705		CKSSYB102K50
C	3706		CKSSYB102K50
C	3707	CAPACITOR(CERAMIC)	VCG1057
C	3738	CAPACITOR(CERAMIC)	VCG1057
C	3801	CAPACITOR(CERAMIC)	VCG1057
C	3802	CAPACITOR(CERAMIC)	VCG1057
C	3803	CAPACITOR(CERAMIC)	VCG1057
C	3804	CAPACITOR(CERAMIC)	VCG1057
C	4501	CAPACITOR(CERAMIC)	VCG1057
C	4502	CAPACITOR(CERAMIC)	VCG1057
C	4503	CAPACITOR(CERAMIC)	VCG1057
C	4504		CKSSYF104Z16
C	4505	CAPACITOR(CERAMIC)	VCG1057
C	4506		CKSSYF104Z16
C	4507		CEVW101M16
C	4508	CHIP ELECT.CAPACITOR	CEVW221M4

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
C	4509	CHIP ELECT.CAPACITOR	CEVW221M4	C	5123	CAPACITOR(CERAMIC)	VCG1057
C	4511		CKSQYB475K6R3	C	5132	CAPACITOR(CERAMIC)	VCG1057
C	4513		CKSQYB475K6R3	C	5133	CAPACITOR(CERAMIC)	VCG1057
C	4515		CEVW470M6R3	C	5205	CAPACITOR(CERAMIC)	VCG1057
C	4516		CEVW100M16	C	5209		CKSSYF104Z16
C	4522	CAPACITOR(CERAMIC)	VCG1057	C	5210		CEVW101M16
C	4524		CKSQYB475K6R3	C	5211		CKSSYB102K50
C	4525		CKSQYB475K6R3	C	5212		CKSQYB225K10
C	4531	CAPACITOR(CERAMIC)	VCG1057	C	5213	CAPACITOR(CERAMIC)	VCG1057
C	4532		CKSSYB103K16	C	5216		CKSSYB102K50
C	4533	CAPACITOR(CERAMIC)	VCG1057	C	5217	CAPACITOR(CERAMIC)	VCG1057
C	4534		DCH1201	C	5218		CKSSYB102K50
C	4535		CKSSYB102K50	C	5219		CKSSYB102K50
C	4536		CKSSYB102K50	C	5222		CKSSYF104Z16
C	4537		CKSSYB102K50	C	5223		CKSSYB102K50
C	4539		CKSSYB102K50	C	5601	CAPACITOR(CERAMIC)	VCG1057
C	4540		CKSSYB102K50	C	5602	CAPACITOR(CERAMIC)	VCG1057
C	4541	CAPACITOR(CERAMIC)	VCG1057	C	5603		CKSSYF104Z16
C	4542		CKSQYB225K10	C	5604		CKSSYB103K16
C	4543		CKSSYB102K50	C	5605		CKSSYB103K16
C	4555		CKSQYB475K6R3	C	5606		CKSSYB103K16
C	4556		CKSQYB475K6R3	C	5607		CKSSYB103K16
C	4557		CKSSYB103K16	C	5608		CKSSYB103K16
C	4558		CEVW101M16	C	5609		CKSSYB103K16
C	4559		CEVW101M16	C	5610		CKSSYB103K16
C	4562	CAPACITOR(CERAMIC)	VCG1057	C	5611		CKSSYB103K16
C	4563	CAPACITOR(CERAMIC)	VCG1057	C	5612		CKSSYF104Z16
C	4567	CAPACITOR(CERAMIC)	VCG1057	C	5613	CHIP ELECT.CAPACITOR	CEVW101M4
C	4570	CAPACITOR(CERAMIC)	VCG1057	C	5614		CKSSYB103K16
C	4571		CKSQYB475K6R3	C	5615		CKSSYF104Z16
C	4572	CHIP ELECT.CAPACITOR	CEVW221M4	C	5616		CKSSYF104Z16
C	4573		CKSQYB475K6R3	C	5617		CKSSYB103K16
C	4581		CEVW101M16	C	5622		CKSSYB103K16
C	4585		CKSSYF104Z16	C	5623		CKSSYB103K16
C	4586		CEVW101M16	C	5624		CKSSYB103K16
C	4701	CAPACITOR(CERAMIC)	VCG1057	C	5625		CKSSYB103K16
C	4702	CAPACITOR(CERAMIC)	VCG1057	C	5626		CKSSYB103K16
C	4703	CAPACITOR(CERAMIC)	VCG1057	C	5627		CKSSYB103K16
C	4704		CKSSYB102K50	C	5628		CKSSYB103K16
C	4705		CKSSYB102K50	C	5629		CKSSYB103K16
C	4706		CKSSYB102K50	C	5630		CKSSYB103K16
C	5104		CKSSYF104Z16	C	5631		CKSSYB103K16
C	5105	CAPACITOR(CERAMIC)	VCG1057	C	5632		CKSSYB103K16
C	5106	CAPACITOR(CERAMIC)	VCG1057	C	5640		CCSSCH120J50
C	5107	CAPACITOR(CERAMIC)	VCG1057	C	5641		CCSSCH120J50
C	5108	CAPACITOR(CERAMIC)	VCG1057	C	5702	CAPACITOR(CERAMIC)	VCG1057
C	5109		CKSSYF104Z16	C	5704		CEVW1R0M50
C	5110	CAPACITOR(CERAMIC)	VCG1057	C	5705		CKSSYB102K50
C	5111	CAPACITOR(CERAMIC)	VCG1057	C	5706		CKSSYB102K50
C	5112	CAPACITOR(CERAMIC)	VCG1057	C	5707	CAPACITOR(CERAMIC)	VCG1057
C	5113		CKSSYF104Z16	C	5708	CHIP ELECT.CAPACITOR	CEVW221M4
C	5114		CKSSYF104Z16	C	5801	CAPACITOR(CERAMIC)	VCG1057
C	5115	CAPACITOR(CERAMIC)	VCG1057	C	5802		CKSSYB102K50
C	5116	CAPACITOR(CERAMIC)	VCG1057	C	5803	CAPACITOR(CERAMIC)	VCG1057
C	5117		CCSSCH120J50	C	5804		CKSSYB102K50
C	5118		CCSSCH120J50	C	5805	CAPACITOR(CERAMIC)	VCG1057
C	5119		CKSSYB271K50	C	5806	CAPACITOR(CERAMIC)	VCG1057
C	5120	CAPACITOR(CERAMIC)	VCG1057	C	5807	CAPACITOR(CERAMIC)	VCG1057
C	5121	CHIP ELECT.CAPACITOR	CEVW101M4	C	5808	CAPACITOR(CERAMIC)	VCG1057
C	5122	CHIP ELECT.CAPACITOR	CEVW101M4	C	5809	CHIP ELECT.CAPACITOR	CEVW221M4

Mark	No.	Description	Part No.
C	5812		CKSSYF104Z16
C	5813		CKSSYF104Z16
C	5814		CKSRYF104Z16
C	5815		CKSRYB104K25
C	5816		CKSRYB104K25
C	5817		CKSRYB104K25
C	5818		CKSRYB104K25
C	5819		CKSSYB102K50
C	5820	CAPACITOR(CERAMIC)	VCG1057
C	5821		CKSSYB102K50
C	5822		CKSSYB102K50

E DTVD ASSY

MISCELLANEOUS

IC	101	IC	K4H561638H-UCB3
IC	104	VCXO IC	KA5SDKAS01TSN
IC	106	DTV RECEIVER/DECODER	UPD61111GM-100UEVA
IC	110	IC	TC7SH04FUS1
IC	201	COMMON INTERFACE IC	CIMAXSP2L
IC	202	LOGIC IC	TC74LCX245FK
IC	203	LOGIC IC	TC74LCX373FK
IC	204	LOGIC IC	TC74LCX373FK
IC	205	FLASH ROM	VYW2403
		FLASH MEMORY IC	S29GL032A90TFIR30
IC	207	LOAD SWITCH IC	AAT4610AIGV-1
IC	300	REGULATOR IC	S-1170B25UC-OTK
IC	302	REGULATOR IC (3.3V)	MM1563DF
IC	304	REGULATOR IC	MM1685AN
IC	306	REGULATOR IC	S-1170B50UC-OUJ
IC	307	DUAL REGULATOR	MM1689FH
IC	309	POWER SWITCH IC	FPF2007
IC	311	IF AMP IC	UPC3221GV
IC	312	REGULATOR IC	MM1685AN
IC	313	COFDM IC	DRX3975D-QI-B1
IC	318	IC	NJM12904V
IC	319	REGULATOR IC	S-1112B50MC-L7J
IC	320	REGULATOR IC (1.5V)	MM1561FF
IC	321	LOGIC IC	TC74VCX245FK
IC	322	SINGLE BUS SWITCH	TC7SB66FU
IC	1001	3DY/C SEPA & VDEC IC	UPD64015AGM-UEU
IC	1002	SDRAM(16M)	HY57V161610FTP-6
Q	201	DIGITAL TRANSISTOR	DTC124EUA
Q	202	DIGITAL TRANSISTOR	DTA143EUA
Q	203	TRANSISTOR	2SC4081
Q	204	DIGITAL TRANSISTOR	DTC124EUA
Q	305	TRANSISTOR	2SC2412K
Q	306	TRANSISTOR	2SA1576A
Q	307	TRANSISTOR	2SC4081
Q	308	TRANSISTOR	2SC4081
Q	309	DIGITAL TRANSISTOR	DTC143EUA
Q	310	DIGITAL TRANSISTOR	DTC143EUA
Q	312	DIGITAL TRANSISTOR	DTC124EUA
Q	1001	TRANSISTOR	2SA1576A
Q	1002	TRANSISTOR	2SA1576A
Q	1003	TRANSISTOR	2SA1576A
Q	1004	TRANSISTOR	2SA1576A
Q	1005	TRANSISTOR	2SC4081
Q	1006	TRANSISTOR	2SC4081
Q	1007	TRANSISTOR	2SC4081
Q	1008	TRANSISTOR	2SC4081
D	302	DIODE	SM15T6V8A
D	303	DIODE	1SS355
D	304	DIODE	1SS355
L	304	CHIP COIL	LCYAR82J2520
L	314	CHIP FERRITE BEADS	XTX1003
L	315	CHIP FERRITE BEADS	XTX1001
L	1001	INDUCTOR	LCYA100J2520
L	1002	INDUCTOR	LCYA100J2520
L	1003	INDUCTOR	LCYA100J2520
L	1004	INDUCTOR	LCYA100J2520
L	1005	CHIP COIL	LCYA180J2520
L	1006	CHIP COIL	LCYA180J2520
L	1007	CHIP COIL	LCYA180J2520
L	1008	CHIP COIL	LCYA180J2520
F	101	FERRITE CORE	VTF1091
F	102	FERRITE CORE	VTF1091
F	103	FERRITE CORE	VTF1091
F	104	FERRITE CORE	VTF1091
F	105	FERRITE CORE	VTF1091
F	106	FERRITE CORE	VTF1091
F	108	FERRITE CORE	VTF1091
F	201	FERRITE CORE	VTF1091
F	202	FERRITE CORE	VTF1091
F	203	FERRITE CORE	VTF1091
F	204	FERRITE CORE	VTF1091
F	205	FERRITE CORE	VTF1091
F	206	FERRITE CORE	VTF1091
F	300	FERRITE CORE	VTF1091
F	301	FERRITE CORE	VTF1091
F	302	FERRITE CORE	VTF1091
F	305	FERRITE CORE	VTF1091
F	306	FERRITE CORE	VTF1091
F	309	FERRITE CORE	VTF1091
F	310	FERRITE CORE	VTF1091
F	311	FERRITE CORE	VTF1091
F	312	FERRITE CORE	VTF1091
F	313	FERRITE CORE	VTF1091
F	314	FERRITE CORE	VTF1091
F	316	FERRITE CORE	VTF1091
F	317	FERRITE CORE	VTF1091
F	318	FERRITE CORE	VTF1091
F	319	SAW FILTER	VTF1188
F	321	FERRITE CORE	VTF1091
F	397	FERRITE CORE	VTF1091
F	398	FERRITE CORE	VTF1091
F	1001	EMI FILTER	DTL1106
F	1002	EMI FILTER	DTL1106
F	1003	EMI FILTER	DTL1106
F	1004	EMI FILTER	DTL1106
F	1005	EMI FILTER	DTL1106
F	1006	EMI FILTER	DTL1106
F	1007	EMI FILTER	DTL1106
KN	301	SCREW PLATE	VNE1948
T	300	CHIP BALUN TRANS.	XTX1005
X	100	CRYSTAL RESONATOR	BSS1123
X	300	CRYSTAL RESONATOR	VSS1221
X	1001	CRYSTAL RESONATOR	VSS1220
CN		CONNECTOR GUIDE	VEC2559
CN	102	CONNECTOR	VKN2047

Mark	No.	Description	Part No.
CN	103	CONNECTOR	HLEM24S-1
CN	201	CONNECTOR	VKP2396
CN	203	CONNECTOR POST	B2B-PH
		SCREW	PMZ20P080FTC
U	301	FRONT END	XXF1008

RESISTORS

R	100		RS1/16SS0R0J
R	101		RS1/16SS103J
R	104		RS1/16SS103J
R	105		RS1/16SS330J
R	107		RS1/16S0R0J
R	109		RS1/16SS0R0J
R	110		RS1/16SS560J
R	111		RS1/16SS560J
R	114		RS1/16SS330J
R	116		RS1/16SS103J
R	121	CHIP RESISTOR	RS1/16S1000F
R	122	CHIP RESISTOR	RS1/16S1000F
R	123	CHIP RESISTOR	RS1/16S1000F
R	124	CHIP RESISTOR	RS1/16S1000F
R	125	CHIP RESISTOR	RS1/16S1000F
R	126	CHIP RESISTOR	RS1/16S1000F
R	127	CHIP RESISTOR	RS1/16S1000F
R	128	CHIP RESISTOR	RS1/16S1000F
R	138		RS1/16SS103J
R	139		RS1/16SS103J
R	141		RS1/16SS103J
R	142		RS1/16SS103J
R	143		RS1/16SS103J
R	144		RS1/16SS103J
R	145		RS1/16SS103J
R	146		RS1/16SS103J
R	147		RS1/16SS103J
R	148		RS1/16SS103J
R	149		RS1/16SS473J
R	151		RS1/16SS473J
R	153		RS1/16SS473J
R	154		RS1/16SS473J
R	155		RS1/16SS473J
R	159		RS1/16SS101J
R	160		RS1/16SS101J
R	166		RS1/16S9100F
R	167		RS1/16S9100F
R	168		RS1/16S2200F
R	169		RS1/16S1500F
R	170		RS1/16SS330J
R	172		RS1/16SS103J
R	173		RS1/16SS0R0J
R	174		RS1/16SS101J
R	179		RS1/16SS103J
R	182		RS1/16SS0R0J
R	183		RS1/16SS0R0J
R	185	RESISTOR ARRAY	RAB4CQ560J
R	186	RESISTOR ARRAY	RAB4CQ560J
R	187	RESISTOR ARRAY	RAB4CQ151J
R	188	RESISTOR ARRAY	RAB4CQ101J
R	189	RESISTOR ARRAY	RAB4CQ101J
R	190	RESISTOR ARRAY	RAB4CQ101J
R	191	RESISTOR ARRAY	RAB4CQ101J
R	192	RESISTOR ARRAY	RAB4CQ101J
R	193	RESISTOR ARRAY	RAB4CQ560J
R	194	RESISTOR ARRAY	RAB4CQ560J
R	197		RS1/16SS0R0J
R	199		RS1/16SS0R0J
R	201	RESISTOR ARRAY	RAB4CQ470J
R	202	RESISTOR ARRAY	RAB4CQ470J
R	203	RESISTOR ARRAY	RAB4CQ470J
R	204	RESISTOR ARRAY	RAB4CQ470J
R	205	RESISTOR ARRAY	RAB4CQ470J
R	206	RESISTOR ARRAY	RAB4CQ470J
R	207	RESISTOR ARRAY	RAB4CQ470J
R	208	RESISTOR ARRAY	RAB4CQ470J
R	209	RESISTOR ARRAY	RAB4CQ470J
R	210		RS1/16SS0R0J
R	211		RS1/16SS103J
R	213		RS1/16SS470J
R	214		RS1/16SS101J
R	215		RS1/16SS101J
R	216		RS1/16SS0R0J
R	217		RS1/16S0R0J
R	219		RS1/16SS103J
R	221		RS1/16SS470J
R	222		RS1/16SS103J
R	223	RESISTOR ARRAY	RAB4CQ470J
R	224	RESISTOR ARRAY	RAB4CQ470J
R	225	RESISTOR ARRAY	RAB4CQ470J
R	226	RESISTOR ARRAY	RAB4CQ470J
R	227	RESISTOR ARRAY	RAB4CQ470J
R	228	RESISTOR ARRAY	RAB4CQ470J
R	229		RS1/16SS103J
R	230		RS1/16SS103J
R	231		RS1/16SS821J
R	233		RS1/16SS470J
R	234		RS1/16SS470J
R	236		RS1/16SS0R0J
R	239	RESISTOR ARRAY	RAB4CQ470J
R	240	RESISTOR ARRAY	RAB4CQ470J
R	241	RESISTOR ARRAY	RAB4CQ470J
R	242	RESISTOR ARRAY	RAB4CQ470J
R	243	RESISTOR ARRAY	RAB4CQ470J
R	244	RESISTOR ARRAY	RAB4CQ470J
R	245	RESISTOR ARRAY	RAB4CQ470J
R	246	RESISTOR ARRAY	RAB4CQ470J
R	247	RESISTOR ARRAY	RAB4CQ470J
R	248	RESISTOR ARRAY	RAB4CQ470J
R	249	RESISTOR ARRAY	RAB4CQ470J
R	250		RS1/16SS103J
R	251		RS1/16SS103J
R	252		RS1/16SS0R0J
R	253		RS1/16SS470J
R	254		RS1/16SS470J
R	256		RS1/16SS470J
R	257		RS1/16SS470J
R	269		RS1/16SS333J
R	270		RS1/16SS473J
R	271		RS1/16SS223J
R	272		RS1/16SS103J
R	273		RS1/16SS103J
R	275		RS1/16SS103J

Mark	No.	Description	Part No.
R	277		RS1/16SS470J
R	278	RESISTOR ARRAY	RAB4CQ101J
R	279	RESISTOR ARRAY	RAB4CQ101J
R	280	RESISTOR ARRAY	RAB4CQ101J
R	281		RS1/16SS103J
R	300		RS1/16S0R0J
R	303		RS1/16S0R0J
R	304		RS1/16S103J
R	305		RS1/16S0R0J
R	306		RS1/16S0R0J
R	308		RS1/16S682J
R	309		RS1/16S222J
R	310		RS1/16S222J
R	311		RS1/16S681J
R	312		RS1/16S101J
R	313		RS1/16SS472J
R	314		RS1/16SS472J
R	315		RS1/16SS103J
R	316		RS1/16S472J
R	317		RS1/16S682J
R	318		RS1/16S222J
R	319		RS1/16SS473J
R	320		RS1/16S222J
R	321		RS1/16SS472J
R	322		RS1/16S333J
R	323		RS1/16S0R0J
R	325		RS1/16S103J
R	326		RS1/16SS472J
R	327		RS1/16S682J
R	331		RS1/16S152J
R	333		RS1/16S101J
R	336		RS1/16S0R0J
R	337		RS1/16S0R0J
R	341		RS1/16SS392J
R	342		RS1/16SS392J
R	343		RS1/16S0R0J
R	344		RS1/16S0R0J
R	345		RS1/16S0R0J
R	346		RS1/16S0R0J
R	347		RS1/16S0R0J
R	348		RS1/16S0R0J
R	349		RS1/16S0R0J
R	350		RS1/16S0R0J
R	351		RS1/16SS103J
R	352		RS1/16SS103J
R	353		RS1/16SS223J
R	354		RS1/16S0R0J
R	355		RS1/16S0R0J
R	356		RS1/16S0R0J
R	357		RS1/16S0R0J
R	358		RS1/16SS223J
R	359		RS1/16SS103J
R	361		RS1/16S0R0J
R	363		RS1/16SS103J
R	527		RS1/16SS0R0J
R	528		RS1/16SS0R0J
R	529		RS1/16SS0R0J
R	530		RS1/16SS0R0J
R	531		RS1/16SS0R0J
R	532		RS1/16SS0R0J

Mark	No.	Description	Part No.
R	534		RS1/16SS0R0J
R	535		RS1/16SS223J
R	538		RS1/16SS223J
R	540		RS1/16SS223J
R	542		RS1/16SS223J
R	544		RS1/16SS223J
R	546		RS1/16SS223J
R	547		RS1/16SS223J
R	550		RS1/16SS223J
R	551		RS1/16SS223J
R	554		RS1/16SS223J
R	556		RS1/16SS223J
R	558		RS1/16SS223J
R	560		RS1/16SS223J
R	561		RS1/16SS223J
R	564		RS1/16SS223J
R	566		RS1/16SS223J
R	568		RS1/16SS223J
R	569		RS1/16SS101J
R	570		RS1/16SS101J
R	571		RS1/16SS0R0J
R	572		RS1/16SS0R0J
R	575		RS1/16SS103J
R	576		RS1/16SS103J
R	577		RS1/16SS0R0J
R	579		RS1/16SS103J
R	580		RS1/16SS103J
R	589		RS1/16SS0R0J
R	594		RS1/16SS560J
R	595		RS1/16SS560J
R	597		RS1/16SS680J
R	598		RS1/16SS680J
R	605		RS1/16SS0R0J
R	606		RS1/16SS0R0J
R	607		RS1/16SS0R0J
R	608		RS1/16SS470J
R	609		RS1/16SS470J
R	610		RS1/16SS470J
R	616		RS1/16SS470J
R	621		RS1/16SS223J
R	622		RS1/16SS223J
R	623		RS1/16SS0R0J
R	624	RESISTOR ARRAY	RAB4CQ0R0J
R	625	RESISTOR ARRAY	RAB4CQ0R0J
R	626	RESISTOR ARRAY	RAB4CQ0R0J
R	641	RESISTOR ARRAY	RAB4CQ0R0J
R	642		RS1/16SS0R0J
R	643		RS1/16SS0R0J
R	644		RS1/16S0R0J
R	650		RS1/10S0R0J
R	651		RS1/16S0R0J
R	660		RS1/16S1001F
R	661		RS1/16S1001F
R	662		RS1/16S0R0J
R	666		RS1/16S0R0J
R	668		RS1/16S0R0J
R	672		RS1/16S821J
R	673		RS1/16S0R0J
R	674		RS1/16S0R0J
R	678		RAB4CQ330J

Mark	No.	Description	Part No.
R	679		RAB4CQ330J
R	680		RS1/16S330J
R	681		RS1/16S330J
R	682		RS1/16S330J
R	683		RS1/16S0R0J
R	685		RS1/16S103J
R	686		RS1/16S103J
R	687		RS1/16S151J
R	688		RS1/16S0R0J
R	689		RS1/16S0R0J
R	690		RS1/16S0R0J
R	691		RS1/16S0R0J
R	692		RS1/16S0R0J
R	693		RS1/16S0R0J
R	694		RAB4CQ330J
R	695		RAB4CQ330J
R	696		RAB4CQ330J
R	698		RS1/16SS330J
R	699		RS1/16SS330J
R	700		RS1/16SS330J
R	701		RS1/16SS330J
R	702		RS1/16SS330J
R	703		RS1/10S0R0J
R	704		RS1/16SS330J
R	705		RS1/16SS330J
R	706		RS1/16SS330J
R	707		RS1/16SS330J
R	709		RS1/16SS103J
R	714		RS1/10S0R0J
R	715		RS1/16SS0R0J
R	719		RS1/16SS333J
R	720		RS1/16SS103J
R	721	RESISTOR ARRAY	RAB4CQ101J
R	722	RESISTOR ARRAY	RAB4CQ101J
R	723	RESISTOR ARRAY	RAB4CQ151J
R	724	RESISTOR ARRAY	RAB4CQ151J
R	725		RS1/16SS103J
R	726		RS1/16SS103J
R	728		RS1/16SS0R0J
R	729		RS1/16SS0R0J
R	733		RS1/16SS0R0J
R	1001		RS1/16SS470J
R	1002		RS1/16SS470J
R	1003		RS1/16SS470J
R	1004		RS1/16SS470J
R	1017		RS1/16SS331J
R	1018		RS1/16SS331J
R	1019		RS1/16SS331J
R	1020		RS1/16SS331J
R	1021		RS1/16S4700F
R	1022		RS1/16S4700F
R	1023		RS1/16S4700F
R	1024		RS1/16S4700F
R	1025	CHIP RESISTOR	RS1/16SS1801F
R	1026	CHIP RESISTOR	RS1/16SS1801F
R	1027	CHIP RESISTOR	RS1/16SS1801F
R	1028	CHIP RESISTOR	RS1/16SS1801F
R	1029		RS1/16SS100J
R	1030		RS1/16SS100J
R	1031		RS1/16SS100J
R	1032		RS1/16SS100J
R	1033		RS1/16SS681J
R	1034		RS1/16SS681J
R	1035		RS1/16SS681J
R	1036		RS1/16SS681J
R	1037		RS1/16SS473J
R	1038		RS1/16SS473J
R	1039		RS1/16SS473J
R	1040	RESISTOR ARRAY	RAB4CQ103J
R	1042	RESISTOR ARRAY	RAB4CQ101J
R	1043	RESISTOR ARRAY	RAB4CQ101J
R	1044	RESISTOR ARRAY	RAB4CQ101J
R	1045	RESISTOR ARRAY	RAB4CQ101J
R	1046		RS1/16SS101J
R	1047	RESISTOR ARRAY	RAB4CQ101J
R	1048	RESISTOR ARRAY	RAB4CQ101J
R	1049		RS1/16SS0R0J
R	1050	RESISTOR ARRAY	RAB4CQ101J
R	1051	RESISTOR ARRAY	RAB4CQ101J
R	1052	RESISTOR ARRAY	RAB4CQ101J
R	1053		RS1/16SS221J
R	1054		RS1/16SS103J
R	1055		RS1/16SS473J
R	1057		RS1/16S0R0J
R	1058		RS1/16SS103J
R	1059		RS1/16SS103J
R	1060		RS1/16SS472J
R	1061		RS1/16SS472J

CAPACITORS

C	101	CAPACITOR(CERAMIC)	VCG1057
C	102		CKSSYF104Z16
C	103		CKSSYB102K50
C	104		CKSSYF104Z16
C	105		CKSSYB102K50
C	106		CKSSYF104Z16
C	107	CAPACITOR(CERAMIC)	VCG1057
C	108		CKSSYF104Z16
C	109		CKSSYF104Z16
C	110		CKSRYF104Z25
C	111	CAPACITOR(CERAMIC)	VCG1057
C	112		CKSSYF104Z16
C	113	CAPACITOR(CERAMIC)	VCG1057
C	114		CKSSYF104Z16
C	115	CHIP ELECT.CAPACITOR	CEVW221M4
C	116		CKSSYF104Z16
C	117	CAPACITOR(CERAMIC)	VCG1057
C	118		CKSSYF104Z16
C	119	CAPACITOR(CERAMIC)	VCG1057
C	120		CKSSYF104Z16
C	121	CAPACITOR(CERAMIC)	VCG1057
C	124		CKSSYF104Z16
C	125		CKSSYF104Z16
C	126	CAPACITOR(CERAMIC)	VCG1057
C	127		CKSSYF104Z16
C	128		CKSSYF104Z16
C	129	CAPACITOR(CERAMIC)	VCG1057
C	130		CKSSYF104Z16
C	131		CKSSYF104Z16
C	134		CKSSYF104Z16

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
C	135		CKSSYF104Z16	C	353		CEVW100M16
C	136	CAPACITOR(CERAMIC)	VCG1057	C	354		CKSRYB105K10
C	137	CAPACITOR(CERAMIC)	VCG1057	C	356		CCSRCH220J50
C	138		CKSSYF104Z16	C	358		CKSRYF104Z25
C	140		CKSSYF104Z16	C	359		CKSRYF104Z25
C	142		CKSSYF104Z16	C	361		CCSRCH220J50
C	144	CHIP ELECT.CAPACITOR	CEVW221M4	C	364		CKSRYF104Z25
C	147	CHIP ELECT.CAPACITOR	CEVW221M4	C	366		CEVW101M16
C	148		CCSSCK1R0C50	C	367	CHIP ELECT.CAPACITOR	CEVW100M50
C	149		CCSSCK1R0C50	C	368		CEVW101M16
C	154		CKSSYF104Z16	C	369		CKSRYB102K50
C	155		CKSSYF104Z16	C	370		CCSRCH101J50
C	191	CAPACITOR(CERAMIC)	VCG1057	C	372		CKSRYF104Z25
C	192		CKSSYF104Z16	C	373		CKSQYB225K10
C	193	CAPACITOR(CERAMIC)	VCG1057	C	375		CKSRYB103K50
C	194	CAPACITOR(CERAMIC)	VCG1057	C	378		CEVW100M16
C	201		CKSSYF104Z16	C	379		CKSRYF104Z25
C	202		CKSSYF104Z16	C	380		CKSRYF104Z25
C	203		CKSSYF104Z16	C	381		CEVW101M16
C	204		CKSSYF104Z16	C	382		CEVW101M16
C	205		CKSSYF104Z16	C	383		CKSRYF104Z25
C	206	CAPACITOR(CERAMIC)	VCG1057	C	384		CKSRYB104K16
C	207	CAPACITOR(CERAMIC)	VCG1057	C	385	CHIP ELECT.CAPACITOR	CEVW221M4
C	208	CAPACITOR(CERAMIC)	VCG1057	C	388		CKSRYB105K10
C	209		CKSSYF104Z16	C	389		CEVW101M16
C	210		CEVW101M16	C	391		CKSRYB103K50
C	211	CHIP ELECT.CAPACITOR	CEVW221M4	C	392		CKSQYB225K10
C	212	CAPACITOR(CERAMIC)	VCG1057	C	393		CKSQYB225K10
C	213		CKSSYF104Z16	C	394		CKSRYF104Z25
C	214	CAPACITOR(CERAMIC)	VCG1057	C	395	CHIP ELECT.CAPACITOR	CEVW221M4
C	215	CAPACITOR(CERAMIC)	VCG1057	C	396		CKSRYB224K10
C	216	CAPACITOR(CERAMIC)	VCG1057	C	397		CCSRCH100D50
C	221		CEVW101M16	C	398		CKSRYF104Z25
C	222	CAPACITOR(CERAMIC)	VCG1058	C	399		CKSRYF104Z25
C	301		CKSRYB105K10	C	400		CKSRYB224K10
C	302	CHIP ELECT.CAPACITOR	CEVW221M4	C	401		CCSRCH471J50
C	303		CCSRCH101J50	C	402		CCSRCH120J50
C	304		CKSRYB105K10	C	404		CKSQYB225K10
C	306		CKSSYB102K50	C	406		CKSRYF105Z10
C	307		CEVW101M16	C	408		CKSRYF104Z25
C	309		CKSRYB105K10	C	409		CKSRYB104K16
C	312		DCH1201	C	412		CKSRYF104Z25
C	313		CKSQYB475K6R3	C	413		CKSRYB104K16
C	314		CKSQYB475K6R3	C	414		CKSRYF104Z25
C	315		CKSQYB475K6R3	C	415		CKSRYF104Z25
C	318		CEVW101M16	C	416		CKSRYF104Z25
C	319		CEVW101M16	C	417		CKSRYF105Z10
C	320		CKSQYB475K6R3	C	418		CKSRYF105Z10
C	324		CEVW220M6R3	C	421		CKSRYF105Z10
C	326		CCSRCH471J50	C	422		CKSRYF104Z25
C	329		CEVW101M16	C	423		CKSRYF104Z25
C	332		CKSQYB225K10	C	431		CKSQYB225K10
C	334		CKSQYB475K6R3	C	433		CKSQYB475K6R3
C	335		CEVW101M16	C	522		CKSSYF104Z16
C	338		CKSRYB105K10	C	524		CKSSYF104Z16
C	339		CEVW101M16	C	528		CKSRYB223K50
C	340		CKSRYB105K10	C	590		CCSSCH100D50
C	341		CKSRYB105K10	C	591		CCSSCH100D50
C	342	CHIP ELECT.CAPACITOR	CEVW221M4	C	592		CCSSCH100D50
C	343	CHIP ELECT.CAPACITOR	CEVW221M4	C	593		CKSRYF104Z25

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
C	594		CKSRYF104Z25	C	1034	CHIP ELECT.CAPACITOR	CEVW221M4
C	595	CHIP ELECT.CAPACITOR	CEVW221M4	C	1035		CKSSYF104Z16
C	596		CKSRYF104Z25	C	1036		CKSSYF104Z16
C	597	CHIP ELECT.CAPACITOR	CEVW221M4	C	1037		CKSSYF104Z16
C	598		CKSRYF104Z25	C	1038		CKSSYF104Z16
C	599		CEVW101M16	C	1039		CKSSYF104Z16
C	600		CKSRYF104Z25	C	1040	CAPACITOR(CERAMIC)	VCG1057
C	601		CEVW101M16	C	1041		CKSSYB102K50
C	602		CKSQYB475K6R3	C	1042	CHIP ELECT.CAPACITOR	CEVW221M4
C	603		CEVW220M6R3	C	1043		CKSSYF104Z16
C	614		CKSSYF104Z16	C	1044		CKSSYF104Z16
C	615		CKSSYF104Z16	C	1045		CKSSYF104Z16
C	616		CKSQYB225K10	C	1046		CKSSYF104Z16
C	618		DCH1201	C	1047		CKSSYF104Z16
C	620		DCH1201	C	1048		CKSSYF104Z16
C	623	CAPACITOR(CERAMIC)	VCG1057	C	1049		CKSSYF104Z16
C	626	CAPACITOR(CERAMIC)	VCG1057	C	1050		CKSSYF104Z16
C	628	CAPACITOR(CERAMIC)	VCG1057	C	1051		CKSSYF104Z16
C	629		CKSQYB225K10	C	1052		CKSSYF104Z16
C	630		CKSSYB102K50	C	1053		CKSSYF104Z16
C	633		CKSQYB225K10	C	1054		CKSSYF104Z16
C	634	CAPACITOR(CERAMIC)	VCG1057	C	1055		CKSSYF104Z16
C	636	CAPACITOR(CERAMIC)	VCG1058	C	1056		CKSSYF104Z16
C	637	CAPACITOR(CERAMIC)	VCG1057	C	1057	CAPACITOR(CERAMIC)	VCG1057
C	638		CKSSYB102K50	C	1058	CAPACITOR(CERAMIC)	VCG1057
C	639		CKSSYB102K50	C	1059		CEVW100M16
C	640	CAPACITOR(CERAMIC)	VCG1057	C	1060		CKSSYB102K50
C	1001	CAPACITOR(CERAMIC)	VCG1057	C	1061	CAPACITOR(CERAMIC)	VCG1057
C	1002	CAPACITOR(CERAMIC)	VCG1057	C	1062	CAPACITOR(CERAMIC)	VCG1057
C	1003	CAPACITOR(CERAMIC)	VCG1057	C	1063		CKSSYF104Z16
C	1004	CAPACITOR(CERAMIC)	VCG1057	C	1064	CAPACITOR(CERAMIC)	VCG1057
C	1005		CCSSCH220J50	C	1065	CAPACITOR(CERAMIC)	VCG1057
C	1006		CCSSCH220J50	C	1066	CAPACITOR(CERAMIC)	VCG1057
C	1007		CCSSCH220J50	C	1067	CAPACITOR(CERAMIC)	VCG1057
C	1008		CCSSCH220J50	C	1068	CAPACITOR(CERAMIC)	VCG1057
C	1009		CCSRCH7R0D50	C	1069	CAPACITOR(CERAMIC)	VCG1057
C	1010		CCSRCH7R0D50	C	1070	CAPACITOR(CERAMIC)	VCG1057
C	1011		CCSRCH7R0D50	C	1071	CAPACITOR(CERAMIC)	VCG1057
C	1012		CCSRCH7R0D50	C	1072	CAPACITOR(CERAMIC)	VCG1057
C	1013		CCSSCH820J50	C	1073	CAPACITOR(CERAMIC)	VCG1057
C	1014		CCSSCH820J50	C	1074	CAPACITOR(CERAMIC)	VCG1057
C	1015		CCSSCH820J50	C	1075	CAPACITOR(CERAMIC)	VCG1057
C	1016		CCSSCH820J50	C	1076	CAPACITOR(CERAMIC)	VCG1057
C	1017		CCSRCH7R0D50	C	1077	CAPACITOR(CERAMIC)	VCG1057
C	1018		CCSRCH7R0D50	C	1078	CAPACITOR(CERAMIC)	VCG1057
C	1019		CCSRCH7R0D50	C	1079		CKSSYB102K50
C	1020		CCSRCH7R0D50	C	1080	CAPACITOR(CERAMIC)	VCG1057
C	1021		CCSSCH150J50	C	1081		CKSSYB102K50
C	1022		CCSSCH150J50	C	1082	CHIP ELECT.CAPACITOR	CEVW221M4
C	1023		CCSSCH150J50	C	1083	CAPACITOR(CERAMIC)	VCG1057
C	1024		CCSSCH150J50	C	1084	CAPACITOR(CERAMIC)	VCG1057
C	1025	CAPACITOR(CERAMIC)	VCG1057	C	1085	CAPACITOR(CERAMIC)	VCG1057
C	1026	CAPACITOR(CERAMIC)	VCG1057	C	1086	CAPACITOR(CERAMIC)	VCG1057
C	1027	CAPACITOR(CERAMIC)	VCG1057	C	1087	CAPACITOR(CERAMIC)	VCG1057
C	1028	CAPACITOR(CERAMIC)	VCG1057	C	1088		CKSSYF104Z16
C	1029		CKSRYB103K50	C	1089	CAPACITOR(CERAMIC)	VCG1057
C	1030		CKSRYB103K50	C	1090	CAPACITOR(CERAMIC)	VCG1057
C	1031		CKSRYB103K50	C	1091	CHIP ELECT.CAPACITOR	CEVW221M4
C	1032		CKSRYB103K50	C	1092	CAPACITOR(CERAMIC)	VCG1057
C	1033		CKSRYB103K50	C	1093	CAPACITOR(CERAMIC)	VCG1057

Mark	No.	Description	Part No.
C	1094		CCSRCH100D50
C	1095		CCSRCH100D50
C	1096	CAPACITOR(CERAMIC)	VCG1057
C	1097	CAPACITOR(CERAMIC)	VCG1057
C	1098	CAPACITOR(CERAMIC)	VCG1057
C	1099	CAPACITOR(CERAMIC)	VCG1057
C	1100	CAPACITOR(CERAMIC)	VCG1057
C	1101	CAPACITOR(CERAMIC)	VCG1057
C	1103		CKSSYF104Z16
C	1104		CKSSYF104Z16
C	1105		CKSSYF104Z16
C	1106		DCH1201
C	1107		CKSSYB102K50
C	1108		CKSSYB102K50
C	1109		CKSSYB102K50
C	1110		CKSSYF104Z16
C	1111		CKSSYF104Z16
C	1112		CKSSYB102K50
C	1113		CKSSYF103Z50
C	1114	CAPACITOR(CERAMIC)	VCG1057
C	1115		CKSSYB102K50
C	1116		CKSSYB102K50
C	1117		CKSSYB102K50
C	1118		CKSSYB102K50
C	1119	CHIP ELECT.CAPACITOR	CEVW221M4
C	1120		CKSSYF104Z16
C	1121		CKSSYF104Z16
C	1122		CEVW101M16

F SERVICE DVUB ASSY (DVR-LX60D, DVR-LX60D-AV)

MISCELLANEOUS

L	904 (B,217,25)	CHIP FERRITE BEADS	VTL1169
L	905 (B,219,7)	CHIP FERRITE BEADS	VTL1169
L	907 (B,219,31)	CHIP FERRITE BEADS	VTL1169
L	908 (B,217,31)	CHIP FERRITE BEADS	VTL1169
JA	901 (A,204,59)	1394-TERMINAL	VKN2028
JA	902 (A,203,15)	USB CONNECTOR	VKB1226
JA	903 (A,219,37)	USB CONNECTOR	VKB1227
CN	901 (A,231,57)	CONNECTOR	VKN1932
CN	902 (A,231,30)	CONNECTOR	VKN1936

RESISTORS

R	901 (B,222,52)		RS1/16S0R0J
R	902 (B,222,55)		RS1/16S0R0J
R	903 (B,222,63)		RS1/16S0R0J
R	904 (B,222,67)		RS1/16S0R0J
R	905 (B,225,21)		RS1/16S330J
R	906 (B,225,17)		RS1/16S330J
R	907 (B,222,40)		RS1/16S330J
R	908 (A,226,57)		RS1/16S0R0J
R	909 (B,222,43)		RS1/16S330J
R	912 (A,227,69)		RS1/16S0R0J

CAPACITORS

C	905 (A,227,29)		CKSRYF105Z10
C	906 (A,227,32)		CKSRYF105Z10
C	907 (B,216,49)		CKSRYF104Z25
C	908 (B,212,67)		CKSRYF104Z25

Mark	No.	Description	Part No.

F SERVICE DVUB ASSY (DVR-550HX-S)

MISCELLANEOUS

JA	901 (A,204,59)	1394-TERMINAL	VKN2028
CN	901 (A,231,57)	CONNECTOR	VKN1932

RESISTORS

R	901 (B,222,52)		RS1/16S0R0J
R	902 (B,222,55)		RS1/16S0R0J
R	903 (B,222,63)		RS1/16S0R0J
R	904 (B,222,67)		RS1/16S0R0J
R	908 (A,226,57)		RS1/16S0R0J
R	912 (A,227,69)		RS1/16S0R0J

CAPACITORS

C	907 (B,216,49)		CKSRYF104Z25
C	908 (B,212,67)		CKSRYF104Z25

G POWER SUPPLY ASSY

POWER SUPPLY ASSY has no service part.